JANUARY | 1956

products finishing

FINISHES ON METAL PRODUCTS

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Heat Treat to Improve Plating	Page 28
Finishing Clinic	Page 36
Treating Water for Plating	Page 38
Anodizing Building Panels	Page 70
What's New?	Page 92
(Complete Table of Contents	Page 5)

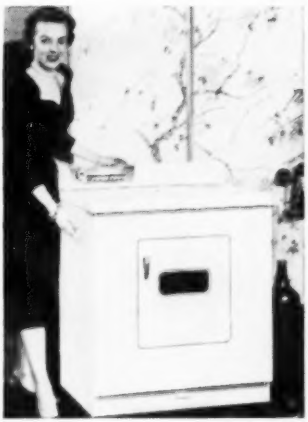
PRODUCTS FINISHING

Party Dress for a "Jubilee Celebration" dryer

Dressed up and going places, is this sparkling, new, "Jubilee Celebration" line of Hamilton Dryers. Designed to celebrate the 75th anniversary of this pioneer firm, special attention was given to insuring a rich, lasting finish with highest resistance to moisture, chemicals and heat.

The answer? KEMCLAD®—the Sherwin-Williams white-for-life appliance finish that stays bright, clean and stain-free.

KEMCLAD Appliance Finishes are adaptable to individual drying and production line needs . . . provide the technical advantages of the most extensive laboratories in the world devoted to paint research. Investigate what these or other Sherwin-Williams developments can do for you. Contact The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio, or Montreal.



Gold and black trim accentuates gleaming white KEMCLAD finish on new Hamilton Dryers.

SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

PRODUCTS FINISHING — JANUARY, 1956

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EDITORIAL ITEMS

1	14	27	40	53	66	79	92
2	15	28	41	54	67	80	93
3	16	29	42	55	68	81	94
4	17	30	43	56	69	82	95
5	18	31	44	57	70	83	96
6	19	32	45	58	71	84	97
7	20	33	46	59	72	85	98
8	21	34	47	60	73	86	99
9	22	35	48	61	74	87	100
10	23	36	49	62	75	88	101
11	24	37	50	63	76	89	102
12	25	38	51	64	77	90	103
13	26	39	52	65	78	91	104

ADVERTISEMENTS

Second Cover				Third Cover			Fourth Cover			
105	118	131	144	157	170	183	196	209	222	235
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107	120	133	146	159	172	185	198	211	224	237
108	121	134	147	160	173	186	199	212	225	238
109	122	135	148	161	174	187	200	213	226	239
110	123	136	149	162	175	188	201	214	227	240
111	124	137	150	163	176	189	202	215	228	241
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113	126	139	152	165	178	191	204	217	230	243
114	127	140	153	166	179	192	205	218	231	244
115	128	141	154	167	180	193	206	219	232	245
116	129	142	155	168	181	194	207	220	233	246
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Your Monthly Source For Finishing Ideas

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8	21	34	47	60	73	86	99
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109	122	135	148	161	174	187	200	213	226	239
110	123	136	149	162	175	188	201	214	227	240
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112	125	138	151	164	177	190	203	216	229	242
113	126	139	152	165	178	191	204	217	230	243
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117	130	143	156	169	182	195	208	221	234	247

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FIRST CLASS
PERMIT No. 7414
NEW YORK, N. Y.

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

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BOX 105
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Here's the best shortcut in the field of electroplating

One operation usually removes rust and oil at the same time. One alkaline tank may remove oxides, drawing compound residues and other stubborn soils . . . even strip zinc and cadmium from rejects and racks.

Sensational Oakite Rustripper frequently eliminates acid pickling and its troublesome after-effects: (1) hydrogen embrittlement; and (2) smut that must be removed by electrocleaning or hand brushing.

FREE...Our illustrated booklet tells how this shortcut may save you time and money—in tank lines, in automatic platers, in barrel lines—by saving equipment, floor space, acids, water, steam and electricity. Write or send coupon for your copy.

OAKITE PRODUCTS, INC. • 20 Rector St., New York 6, N. Y.

Send me a FREE copy of your booklet *"Here's the best shortcut in the field of electroplating."*

NAME_____

COMPANY_____

ADDRESS_____

OAKITE

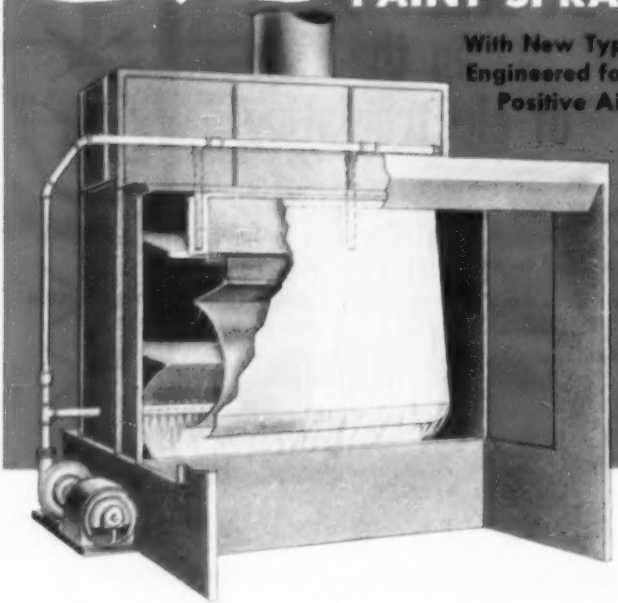
Technical Service Representatives in Principal Cities of U. S. and Canada

For more data circle 118 on Reader Service Card

DESPATCH

NEW WATER WASH PAINT SPRAY BOOTH

With New Type Baffle Chamber Engineered for 100% Efficiency Positive Air Cleaning Action



Entirely New! The new type baffle chamber provides a positive air cleaning action that prevents paint pigments, moisture and volatiles from reaching the exhaust stack or the outside of a building.

The new air scrubbing chamber features a specially-designed spray header mounted within two curved baffle plates. When water is pumped into the header it sprays forth in three directions from three rows of orifices and strikes the baffle plates, building up a violent spray turbulence that removes practically every last particle of paint.

Lower Operating Cost by Actual Test!

NEW **Water curtain supply header** is located *outside* the plenum chamber for easy access. Vertical feeder lines do not interfere with tank adjustments.

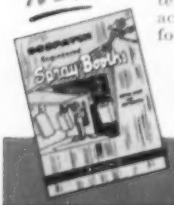
NEW **Water Curtain Supply Tank** is completely adjustable. It provides a uniform, non-splashing flow of water that completely covers the curtain and prevents any paint accumulation.

NEW **Bleeder Line Keeps Header Clean** . . . keeps orifices from clogging. The new Bleeder line causes a continuous flow of water from the bottom of the header, preventing the settling of solids in the bottom of the pipe.

NEW **Fast-Action Removable Panels** permit easier maintenance. The entire interior of the booth is accessible in just 3 minutes, by removing just four fast-action clamps per section.

1. Will exhaust air containing not more than 5 grains of solid every 1000 cu. ft. of air handled.*
2. Will exhaust air containing not more than 50 parts per million solvent vapors.*
3. Will reduce down time for cleaning to a very minimum, thus increasing production.
4. Will prevent paint pigments, moisture and volatiles from reaching exhaust stack or outside of building.
5. Will thoroughly eliminate moisture from exhaust air, before it is exhausted.

*Based on spraying rate of approx. 3 gal. per hour per ft. length of booth.



Write for Bulletin No. 66

Dept. C

Minneapolis Office: 619 E.E. 8th St.
Chicago Office: 4554 N. Broadway
Sales and Service in All Principal Cities

DESPATCH OVEN COMPANY

For more data circle **119** on Reader Service Card

STILL TANK ?
FULL AUTOMATIC ?

RECTIFIERS ?
GENERATORS ?
CONTROL EQUIPMENT ?

Aluminum anodizing ?

CHROMIC ACID ?
SULFURIC ACID ?

INSTALLATION ?
ENGINEERING ?

At any stage, from planning to production, your problems can *best* be solved by H-VW-M . . . the one company combining complete engineering service with a complete line of equipment, processes and supplies.

PLATEMANSHIP

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

H-VW-M

HANSON-VAN WINKLE-MUNNING COMPANY, MATAWAN, N. J.
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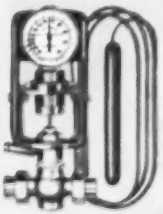
INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

For more data circle 120 on Reader Service Card

HERE'S A TIP ON CHROMIUM PLATING

INSTALL POWERS Automatic Temperature Control For All Metal Finishing Processes

For plating tanks and other metal finishing processes. Powers Controls quickly pay back their cost by accurately holding solutions at a constant uniform temperature.



POWERS NO. 11MF SELF-OPERATING Temperature Indicating Regulator

POWERS Series 100 Temperature Indicating Controller

3

POWERS

TECHNICAL DATA SHEET

CHROMIUM

IF you plate—CHROMIUM

***Too high a temperature* can result in:**

1. Burnt deposits
2. Frosty deposits
3. A decrease in cathode efficiency
4. A loss in throwing power
5. A soft deposit

***Too low a temperature* can result in:**

1. A slow rate of plating
2. Milky deposits
3. A decrease in tensile strength
4. A decrease in deposit density
5. Cracked deposits
6. Dark deposits

CUT LOSSES FROM

OVER and UNDER HEATED PLATING SOLUTIONS

Write for Bulletin 330 (C27S)

THE POWERS REGULATOR COMPANY

SKOKIE, ILLINOIS • OFFICES IN CHIEF CITIES IN U.S.A. AND CANADA • SEE YOUR PHONE BOOK

For more data circle 121 on Reader Service Card

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Consulting and Contributing Editors

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products finishing

Vol. 20 No. 4 January, 1956

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Member

BPA NBP

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Manufacturer Reports

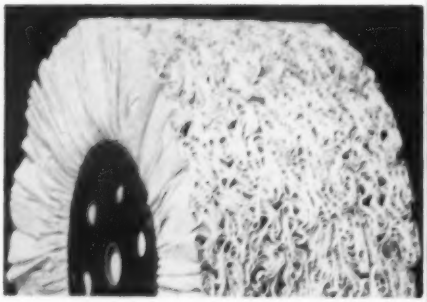
BETTER FINISH

WITH

HIGHER COLOR

with new Churchill

Finger - Buff* #300H15



This new Churchill Finger-Buff* #300H15 is a new type of Finger-Buff* . . . unique in that the face of the buff is deliberately made non uniform. This eliminates all tendency to streak or gouge the work.

Manufacturers report that results with this new #300H15 are better finish with higher color on stainless, copper, and zinc die castings.

The Churchill Finger-Buff* #300H15 is made only with the best grade, heaviest weight, all new 86/93 bias-cut cotton cloth.

- Churchill Finger-Buffs* are competitively priced. Produced in all sizes from 6" to 18" diameters. For complete information write your problem.

*Churchill Finger-Buff, T.M. Reg. U.S. Pat. Off.

REPRESENTATIVES IN PRINCIPAL CITIES

Geo. R. Churchill Co., INC.

FREE Catalog

Dept. PF, Hingham, Mass.

Please send me FREE Catalog and complete information. My special buffing problem is .....

Name ..... Title .....

Firm .....

Street .....

City ..... Zone ..... State .....

For more data circle 122 on Reader Service Card

products finishing

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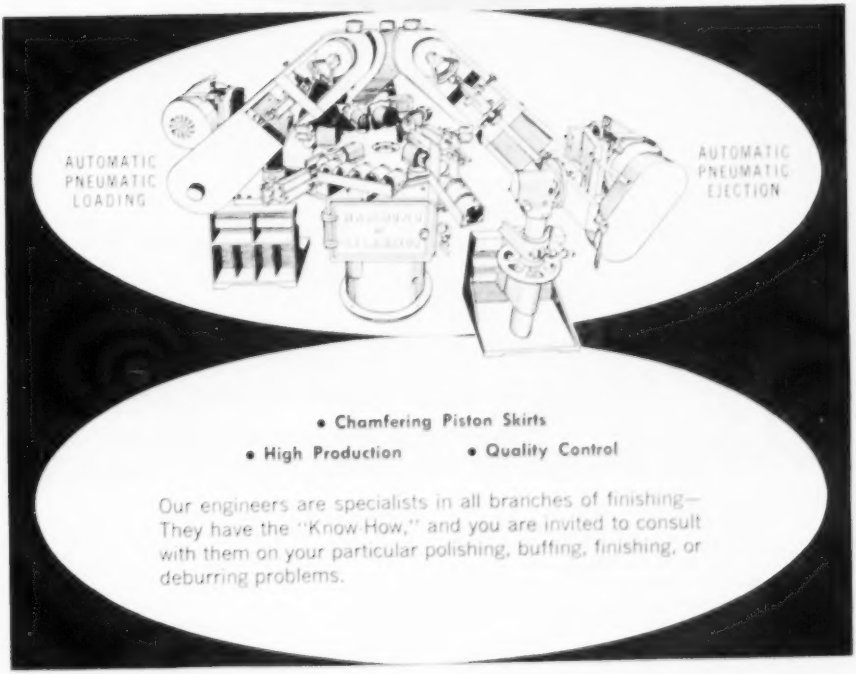
products finishing

431 Main St. Cincinnati 2, Ohio

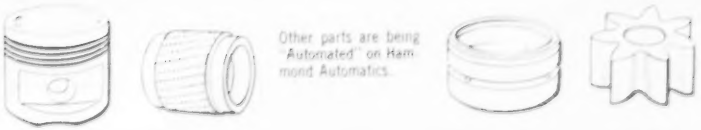
Hammond
of KALAMAZOO
AUTOMATION



• Chamfering Piston Skirts

• High Production • Quality Control

Our engineers are specialists in all branches of finishing—They have the "Know-How," and you are invited to consult with them on your particular polishing, buffing, finishing, or deburring problems.



Other parts are being "Automated" on Hammond Automatics.

Hammond Machinery Builders Inc. 1622 DOUGLAS AVE. • KALAMAZOO, MICH.

For more data circle 123 on Reader Service Card

CONTROLLED GRAIN SIZE: APW Extrusion Process* controls grain size within definite limits—*minimizes shedding!*

ROLLED FLAT PLATE ANODE SECTION:
This Photomicrograph shows highly irregular, uncontrolled grain size—a major cause of shedding and resultant rough electrodeposits.

APW EXTRUDED ANODE SECTION:
Note small, fully controlled regularity of grain size that promotes uniform corrosion, smoothest electrodeposits, less rejects.

*Pat. Pending

NEW! SHAPED, EXTRUDED APW SILVER ANODES

STANDARD SHAPES: "RECTANGULAR" "TEAR DROP" "DOG BONE"

The common problem of shedding and all of its costly results in electroplating can now be virtually eliminated with the radically new extruded, shaped silver anodes made by an exclusive APW-developed process.

The small and uniform grain size produced in the new APW extruded anodes is controlled between definite ideal limits as illustrated above. As a result, corrosion is *smooth and uniform*—with consistently smooth electrodeposits. Rejects are a comparative rarity.

The new APW extruded anode provides equally important advantages by redistribution of mass metal in scientifically determined shapes. While conventional rolled flat plate anodes quickly wear to a sharp knife edge from which silver particles break loose readily, APW shaped anodes maintain substantially rounded edges for practically the complete life of the anode. Anode area is also appreciably prolonged. After 85% by weight has been plated off, *this APW anode retains 80% of original active surface area!* You profit with the longer, useful life of the anode . . . polarization is minimized . . . there is less silver scrap to be refined.

APW will develop special anode shapes to meet particular plating bath conditions. You are thus assured of utilizing the silver you buy in anodes most efficiently. Feel free to consult us on any anode problems you may have. ★ ★ ★

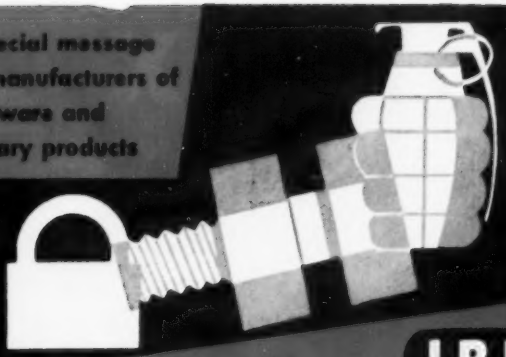
THE AMERICAN PLATINUM WORKS

APW

231 NEW JERSEY RAILROAD AVENUE • NEWARK 5, NEW JERSEY

For more data circle 124 on Reader Service Card

a special message for manufacturers of hardware and military products



need a specification finish for protection, identification, decoration? specify

IRIDITE®

Specify Iridite . . . to meet military specs for corrosion protection during use or storage . . . for paint adherence . . . for low cost color coding . . . or to add quality and sparkle to your products. Here's how you can use Iridite:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

Iridite is approved under government specifications

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD

Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals, ARP Plating Chemicals.
WEST COAST LICENSEE: L. H. Butcher Co.

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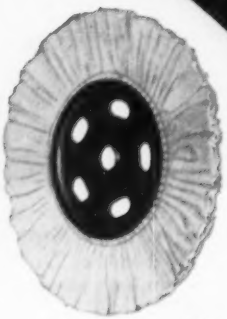
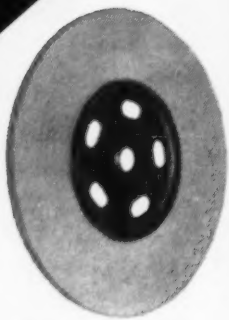
FORMAX

the Perfect Combination

FROM START TO FINISH





ZIPPO CLOTH BUFFS

These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.

BUFFING COMPOUNDS

Formax produces a complete line of buffing compounds in bar, tube and liquid form.

Our extensive manufacturing, laboratory and testing facilities are at your disposal.

ZIPPO SISAL BUFFS

You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.

Other Formax products include the well-known C-20 Flexible Contact Wheels and F-26 Abrasive Belt Grease Stick.

Descriptive Catalogs Sent on Request

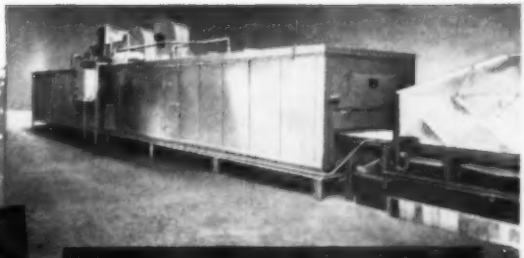
FORMAX MFG. CORP.

DETROIT 7, MICHIGAN

"THE FOUR McALEERS"

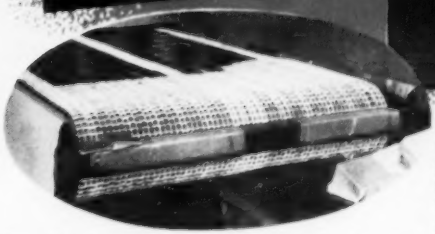
For more data circle 126 on Reader Service Card

This "Famous Name" in Tile bakes over 75,600 pieces per day



with new

BURDETT "Radiant Heat" Conveyor Type Oven



Duratile of Texas, manufacturers of the famous "Duratile" Aluminum Wall Tile, was faced with the common problem of MORE . . . MORE and MORE production to meet the fast increasing demand for their quality product. Speed was important, but obviously *quality* was equally important. Comparison of baking methods and heating principles available, left *no doubt* as to the desired speed of production . . . *highest quality* of the finished product . . . or, *design flexibility* to allow for future *increase in output* by Burdett Ovens.

The BURDETT OVEN design, illustrated, provides ample flexibility to permit future increase in production without equipment change. A tough, high gloss, thoro dry . . . in fact, improved quality . . . is obtained with a 9 minute bake at 320° F. and a conveyor speed of 6 feet per minute. Finish is a synthetic enamel. Temperature range of this oven allows up to 450° F. Conveyor is mesh belt 60" wide. Paint is automatically sprayed. Inherent features of all Burdett "Radiant Heat" systems are: short baking cycle, thoro and uniform bake, exceptionally close control, low cost of operation and essentially no maintenance.

Be sure your System is "BURDETT" —whether "Radiant" or "Convection"

Write for the Burdett story

BURDETT
MANUFACTURING COMPANY

3447 West Madison Street • Chicago 24, Illinois
Detroit Philadelphia New York Cleveland Dallas

Manufacturers of
COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT SYSTEMS", OVENS, HEATERS, AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS

For more data circle 127 on Reader Service Card

A HIT!

Users praise Norton TUMBLEX "T"

— the <u>new</u> bonded, triangular tumbling abrasive

An Unbeatable Combination For Better Barrel-Finishing. The new Norton Tumblex "T" abrasive brings you these advantages for top performance: non-wedging triangular shape; fast-cutting bonded ALUNDUM* abrasive; and 4 sizes for the widest range of applications.

Reports prove Tumblex "T" abrasive brings many new

"TOUCH of GOLD"

benefits to barrel-finishing

Here's one of the most revolutionary barrel-finishing innovations ever developed. In typical on-the-job tests, Norton customers report that the new Tumblex "T" tumbling abrasive:

- ***"cuts tumbling cycle time from five hours to one hour."***
- ***"finishes steel and magnesium parts that could never before be barrel-finished."***
- ***"completely removes burrs from stainless steel parts in four hours. Abrasives previously used failed to do so in 12 hours."***

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Vol. 20, No. 4

JANUARY, 1956

. . . . editorial . . .

Prospects for 1956

Business forecasts are almost unanimous in the opinion that 1955's record-breaking business will continue in 1956. Since the many products manufactured for consumers and for industrial use require finishes of various kinds, the Finishing Industry will enjoy a prosperous year also.

To cite a specific example, a major producer of both home and industrial equipment has estimated that orders are now being received at such a rapid rate that by next June there will be more business on the books than can be produced by 1958. That situation means that a lot of steel, phosphatizing material, paint, and electroplating supplies will be needed. Further, the situation calls for plant expansion if this company is to retain the business and continue to give prompt deliveries. That means additional finishing equipment in the form of spray washers, spray booths, ovens, and electroplating equipment. Certainly this example does not represent an isolated case.

1956 may see a substantial increase in the use of anodized aluminum. The fact that nickel continues in tight supply (see story on Page 147 of this issue) has caused certain manufacturers to consider the substitution of anodized aluminum castings or stampings for zinc base die castings which must be nickel and chromium plated. On Page 88 of the December issue of PRODUCTS FINISHING is illustrated the 1956 Cadillac, available with aluminum wheels and grille, anodized and dyed in gold. This development is a sound and logical answer to the short supply of nickel. If the trend continues, it could result in more widespread use of anodized finishes, and the installation of more anodizing equipment.

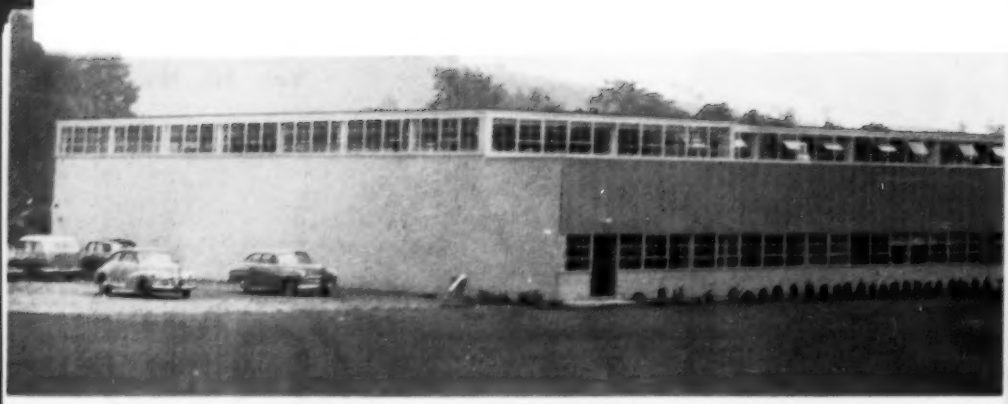
The construction industry is using more and more anodized aluminum (see story on Page 70 of this issue). This use of aluminum calls for new installations of anodizing equipment since such large tank sizes are required.

To repeat, 1956 will be a good year for the Finishing Industry. There will be, as usual, a number of significant developments in products, processes, and techniques used in finishing. These will be reported regularly in the monthly issues of PRODUCTS FINISHING.

1956 will be a competitive year. Those who keep abreast of the new developments and take steps to adopt them to their own operations will profit at the expense of their less alert competitors.

Ezra A. Blount

—EDITOR



Products feature finishing

Finishing Off

Three compact, conveyorized painting and baking systems employed to apply one-coat baked wrinkle finish to metal office equipment.

By EZRA A. BLOUNT
Editor

PRODUCTS MANUFACTURED AND FINISHED in the plant of The Wright Line, Inc., Manufacturing Div., can be classified under the general heading of "Punched Card Accessory Equipment." Since 1933, Wright Line has been a designer and manufacturer of card handling equipment used in conjunction with tabulating cards. During the growth of punched card accounting, card handling has received little consideration. The

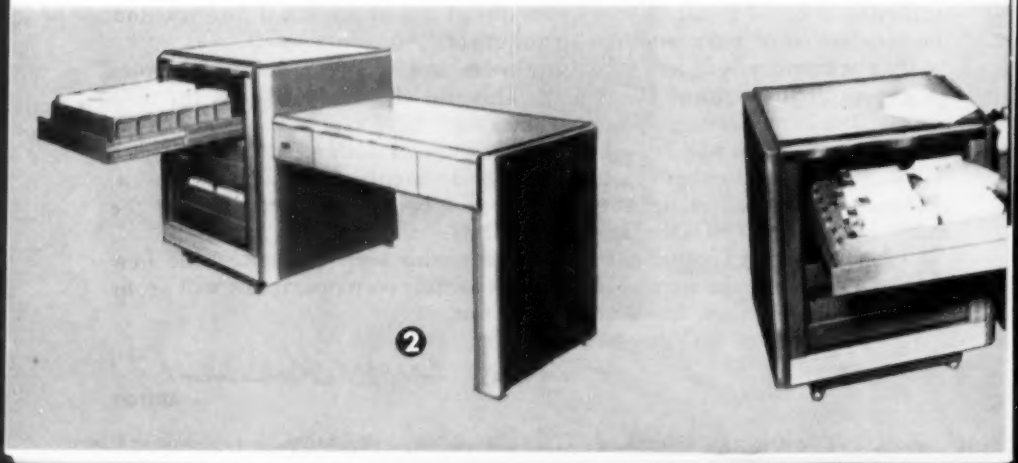


Fig. 1—The new plant of The Wright Line, Inc., Worcester, Mass.

ce Equipment

Unitub, Unitray, and Unistorall, comprising a complete, modern line of card handling, storage, filing and transporting equipment, are marketed by Wright Line to answer this need. These units are finished with a high quality grey "fine" wrinkle finish to harmonize with the current trend in office furniture finishes. An olive green finish is optional, and black wrinkle, or other finish is available on special order.

In addition to the many products and models included in the general

Fig. 2—Two Unistorall custom files designed for vertical filing applications.

Fig. 3—The Wright Line Unitubs feature covers that roll out of the way when the tub is in use and prevent dust infiltration on the cards. The use of stainless steel on all wear surfaces adds contrast to the grey wrinkle finish.

Fig. 4—This functional Unistorall custom file combined with desk top working area adds air of distinction and efficiency to offices, conserves space.

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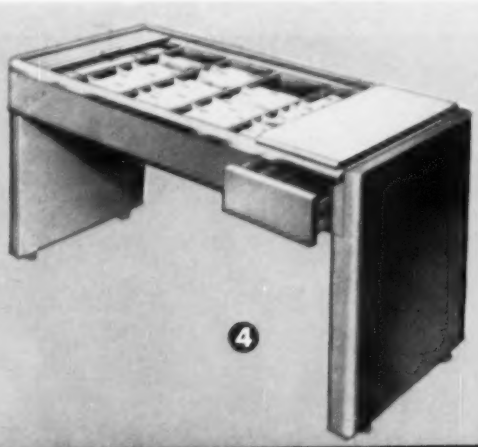

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headings mentioned, the company supplies many types and models of tabulating card files for card filing and storage, card tray truck, control panel wiring unit, control panel storage cabinets, storage racks, sorter rack and truck, sorting needles and clips, card carrying box, vibration isolator, guides and inserts. Other products include the key punch desk file, utility card rack, glide shoes, skip bar cutter, posture office chairs, and other miscellaneous items of office equipment. Some of

Fig. 5—One of the clean, neat aisles in the plant of Wright Line, Inc., showing how machines and storage bins have been centrally located on either side of the line of steel roof supports.

Fig. 6—Deburring of stampings is accomplished on an abrasive belt and polishing lathe, or in the Globe tumbling barrel (right), depending on size and shape of the parts.

these products are illustrated in Figs. 2 and 4.

FABRICATING FACILITIES

The new plant of The Wright Line, Inc., Worcester, Mass., represents but one phase of a four-phase expansion program. The one-floor plant (Fig. 1) contains 36,200 sq. ft. of floor space for manufacturing and factory offices. The completed plant and office building—at the end of the presently-planned expansion program—will have 85,000 sq. ft. of floor space.

The rectangular, well-lighted plant is laid out with the best possible arrangement for efficient materials routing and handling to make possible efficient fabricating and finishing operations. Parts and material to be moved are palletized whenever possible, and moved by shop dollies and conveyors. Machines and equipment are located in straight lines with almost military precision, leaving wide aisles that make material and product movement through the plant easy and quick. The impression created is one of ample space for unhurried yet efficient production operations—basis for smooth, rapid production with a minimum of rejects and defective work. Figure 5 is a view down one of the aisles in the plant, illustrating how the machines are located on each side of the line of steel column roof supports, and showing also the steel storage racks for parts in process, raw material, tools, and other necessary items.

The receiving department is so arranged that trucks may back into the plant to unload sheet steel. A 5-ton overhead crane performs unloading and movement of the steel to its proper storage space. When stock is scheduled for fabrication (usually 24, 20, or 14 gauge), it is sheared to size in an area directly adjacent to the storage floor, and then travels in an oval path through the plant, ending up as a crated product for shipment quite near the point of receipt as raw stock. Shipping and receiving facilities are located in the same general plant area.

The metalworking operations performed on the steel are: shearing, punching, forming, spot weld-

Fig. 7—Marks or surface imperfections are removed from welded steel products prior to painting by polishing on abrasive belts. Operators give corners particular attention.

ing, gas welding, and brazing. To reduce operator fatigue, plant engineers have designed and built special press stands for the several press and related operations. These stands are constructed with spring-loaded platforms, so that they can be loaded with stacks of sheet stock, and will rise automatically as sheets are removed. Thus, the top of the stack is maintained at a convenient level.

Steel blanks, after shearing, blanking, or piercing, often have edge burrs that must be removed prior to further forming, assembly welding, or finishing. These burrs are removed from some parts by polishing on abrasive belts mounted on a polishing lathe (Fig. 6). An interesting device incorporating a permanent magnet separates the small steel sheets in the stack so that the polisher may pick up each piece quickly and easily. Smaller parts are deburred in tumbling barrels, one of which may be seen in Fig. 6. The

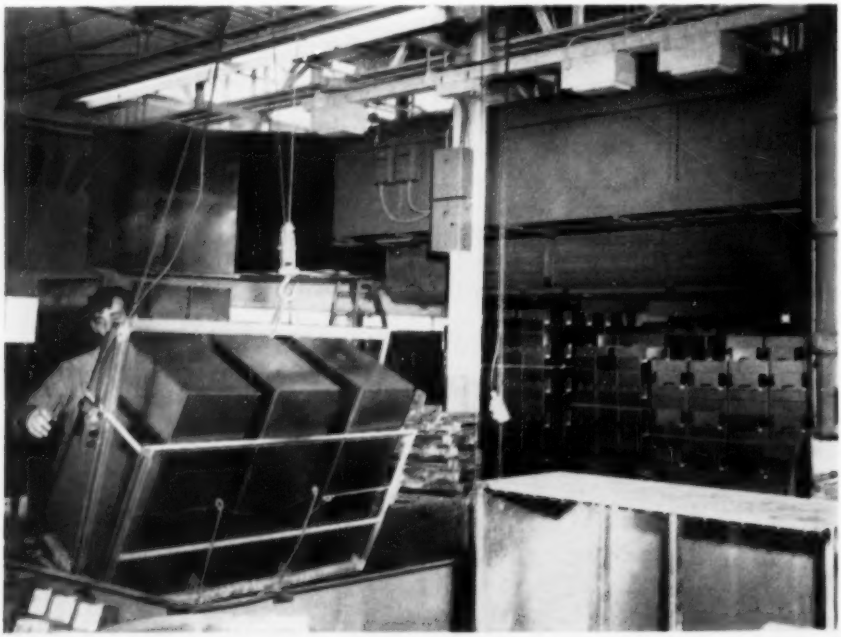


Fig. 8—The degreaser operator is shown immersing a load of steel cabinets into the Detrex solvent-vapor degreaser so that shop dirt and oil may be removed from the metal surface in preparation for painting. In the background may be seen the ceiling-mounted Chromalox infra-red baking oven, and behind it, one of the two Fostoria infra-red ovens. The degreaser is centrally located with respect to the final metal finishing area and the three loading stations for the finishing conveyors. This minimizes materials handling.

small steel products are rotated in the steel barrel with a small amount of abrasive, effectively removing rough edges and burrs. An interesting, practical improvement on one phase of this tumbling process has been made by wrapping a thick foam rubber mat around the drum of the tumbling barrel (Fig. 6) to deaden the sound of the operation (and reduce operator fatigue).

Some sub-assembly operations involve spot welding and gas welding. Corners of drawers or other metal parts are brazed. After welding, these parts are metal finished by polishing with flat disc grinders or abrasive belts mounted on polishing lathes (Fig. 7) to remove any irregularities such as spot weld marks or other surface imperfections.

FINISHING PROCESSES

The finishing department of the plant is equipped with three separate finishing systems, each integrated with the assembly and shipping departments to achieve maximum efficiency of material movement. Each finishing system consists of a paint applying unit and an infra-red baking oven, served by an overhead monorail conveyor.

Two of the systems are identical. Each consists of a DeVilbiss 12-foot water wash spray booth and a Fostoria infra-red baking oven. Each oven (hung from the plant ceiling) is 28½ feet long with a tunnel opening of 5 by 6 feet. Metal products are conveyed from loading stations through paint finish and baking operations and on to unloading stations located either in the finishing department or in the assembly or shipping area, by Richards-Wilcox Zig-Zag

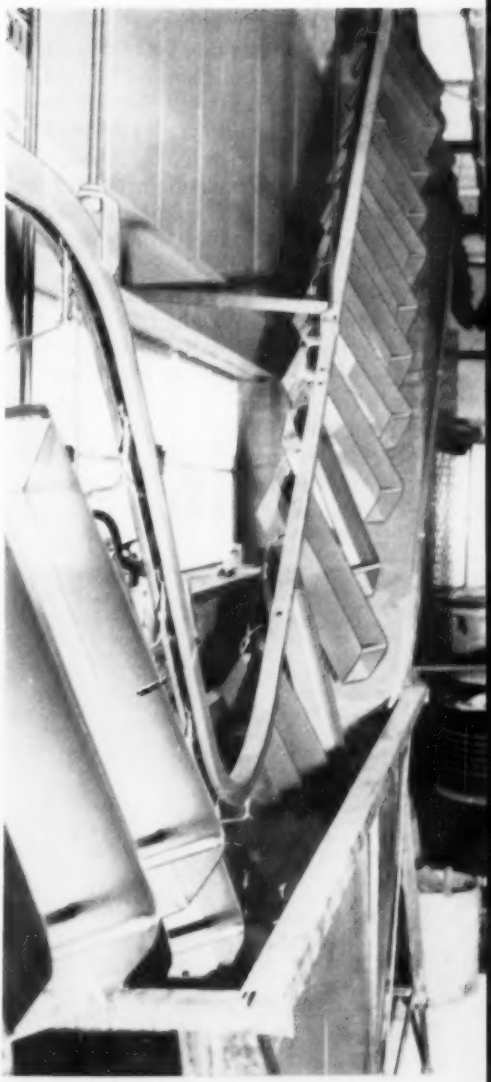


Fig. 9—Parts which can be dipped are enameled on a conveyor which travels through the dip tank (shown above), free air set up area, an infra-red oven and back to the load-unload station. Paint is constantly filtered, circulated and maintained at a uniform viscosity.

heavy duty conveyors.

The third finishing system consists of a paint dip tank and a Chromalox infra-red tunnel oven served by a light trolley conveyor. The oven is 27½ feet long with a 3 by 3-foot tunnel opening. Track mounting of the oven on the plant ceiling makes possible expansion of the tunnel opening to an area 4 by 4 feet.

Various steel units and products making up the Wright Line either as basic parts, or small sub-assemblies, are of various sizes and shapes. To achieve efficient, economical finishing of these parts, Wright engineers, working with equipment suppliers, set up the three finishing systems. Thus, small parts are processed through one system, large parts through the other two. Versatility—applying three different finishes at one time — can be accomplished along with better production scheduling. For example, the line for small parts can be run at such a speed as to produce the number of parts required for assembly with one large unit, finished on a line running at a slower rate.

Centrally located in the finishing area is a Detrex solvent-vapor degreaser used to remove the light oil and grease which remains on steel parts after fabrication (Fig. 8). The solvent employed is DuPont Tri-Clene "D." Depending on the part being processed, cleaned products

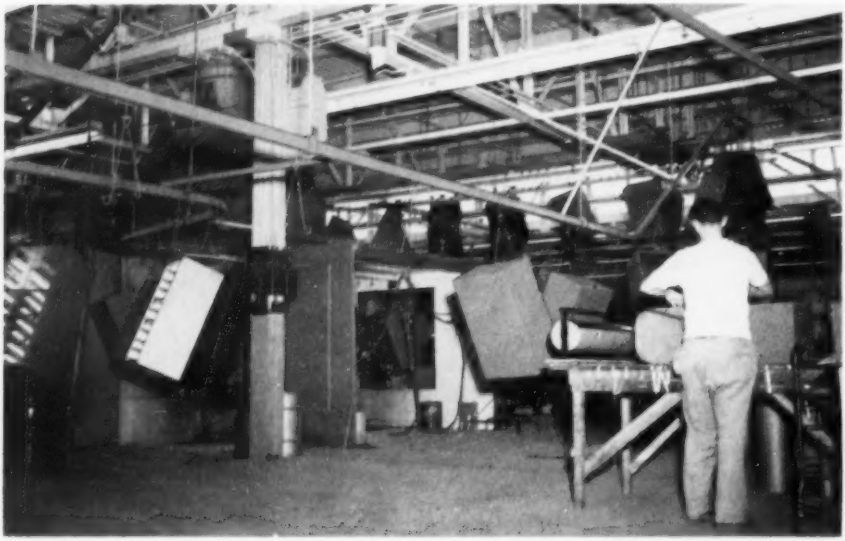


Fig. 10—The conveyor loading station for larger items, such as cabinets, file frames and outer casings for various punched card accessory units is located very near the spray booths. The finished cabinets can be seen in the center of the photograph approaching the conveyor unloading station, where they are removed, wrapped and packed for shipment. Cabinets requiring additional operations before packing are routed to assembly area.

go to one of the three finishing lines for final finishing. Roller skids are used to move parts to conveyor loading stations.

Small metal assemblies or subassemblies whose size, shape, and finish specification are suited to dip painting, are delivered from the degreaser to the proper loading station, wiped with a tack cloth, and hung on 12-inch centers on the dipping conveyor. This conveyor carries the steel parts through the paint dip tank (Fig. 9) where they are coated with grey baking enamel. This enamel is circulated and filtered constantly by means of a Graco pump and filter to keep the paint clean and of uniform consistency. The paint coating sets up during a period of 22 minutes free air travel on the conveyor before the painted parts enter the infra-red oven for baking.

Usually the finish applied to these parts in this system is a grey baking enamel. It is easy to set up this line for another color or another finish merely by placing the new finish in the dip tank.

Dipped parts proceed through the free air set up area and enter the infra-red ceiling mounted oven (background of Fig. 8) in which they are baked for 17½ minutes at a temperature of 325 to 330 deg. F. The oven temperature is controlled by a cycle timer control on the heating elements. Current flows to produce heat for 30 seconds, then is off for 30 seconds. This is adjustable to produce the desired oven temperature—which may be varied with the weight of metal being processed per hour.

The paint dipping conveyor brings the baked and air-cooled finished parts around to the load-unload station. Here, the same operator (who places degreased units on the conveyor for dip paint finishing) unloads finished work for transfer to final assembly.

Larger office equipment units such as cabinets, file frames, outer casings for various punched card accessory units, are loaded on one of the two identical spray painting and baking systems so that they will receive a synthetic grey (or specified color) baked wrinkle finish, or baked enamel finish. In Fig. 10 is shown the loading and unloading station, and the water wash spray booth for one of these spray finishing systems.

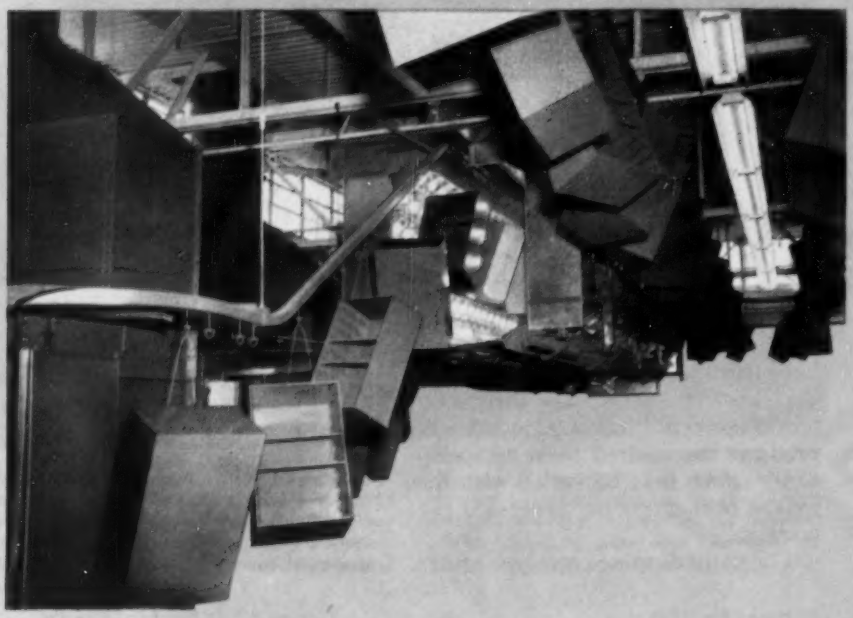
The large cases are suspended by

Fig. 11—Cabinets are sprayed in the DeVilbiss water wash spray booth with grey enamel on the interiors and grey wrinkle finish on exteriors. Vincote or Liquid Envelope strippable spray booth coating is used to catch overspray.

hangers from the swivel hooks located on 18-inch centers on the Richards-Wilcox Zig-Zag conveyor that transports them through the finishing system. Speed of the conveyors is about 3 ft. per min., and is variable. The cases first enter the 12-foot water wash spray booth (Fig. 11) where they are sprayed with grey baking enamel or grey wrinkle finish supplied to the booth from a central paint storage room. Two operators may work in the spray booth when production requirements dictate that arrangement. Otherwise, two different finishes are sprayed in the same booth by one operator. Thus, if a product receives a wrinkle finish on its exterior, and a plain baked enamel finish on the interior, that can be accomplished efficiently in the spray booth shown in Fig. 11.

Paint is pumped to the spray booths through a paint recirculation system which is in operation on a 24-hour, 7-day basis. DeVilbiss pumps, mounted on the 55-gallon paint drums, circulate the paint to both spray booths. Separate lines are employed for baking enamel and wrinkle finishes, and for each color sprayed. In the paint storage and circulation room, paint drums which are "on line" are blanketed with carbon dioxide gas at 1 oz./sq. ft. pressure—this carbon dioxide gas

Fig. 12—Cabinets which have been painted and baked leave the Fostoria infra-red oven and descend to the floor level to be unloaded for packing or assembly. The infra-red baking oven is ceiling-mounted to leave more floor space for storage of the parts being processed.



blanket is used to displace paint and prevent oxidation of the paint. The foreman checks viscosity two to three times daily to keep it uniform and up to specifications.

Painted cabinets pass out of the spray booth and up an incline to an infra-red oven suspended from the factory ceiling (Fig. 12). Here, the units are baked at 365 deg. F. for 12½ minutes, while the rotating or swivel hooks on the conveyor rotate the units slowly as they move through the oven. This achieves a uniform bake on all surfaces and prevents overheating of some points at the expense of others.

The infra-red ovens (Figs. 12, 13) are equipped with end baffles for added flexibility and efficiency. An exhaust on each end of the oven removes solvent and paint fumes. The oven temperature may be regulated manually by controlling the current to the several banks of infra-red bulbs. Speed and amount of rotation of the painted cabinets can be controlled by clutch regulated swivel hooks on the conveyor.

Baked cases make a 180-degree turn on the conveyor and return to the unloading station on the conveyor. In Fig. 12, cases enroute toward the oven, cases in the oven, and baked cases returning from the oven, are all shown in the same picture.

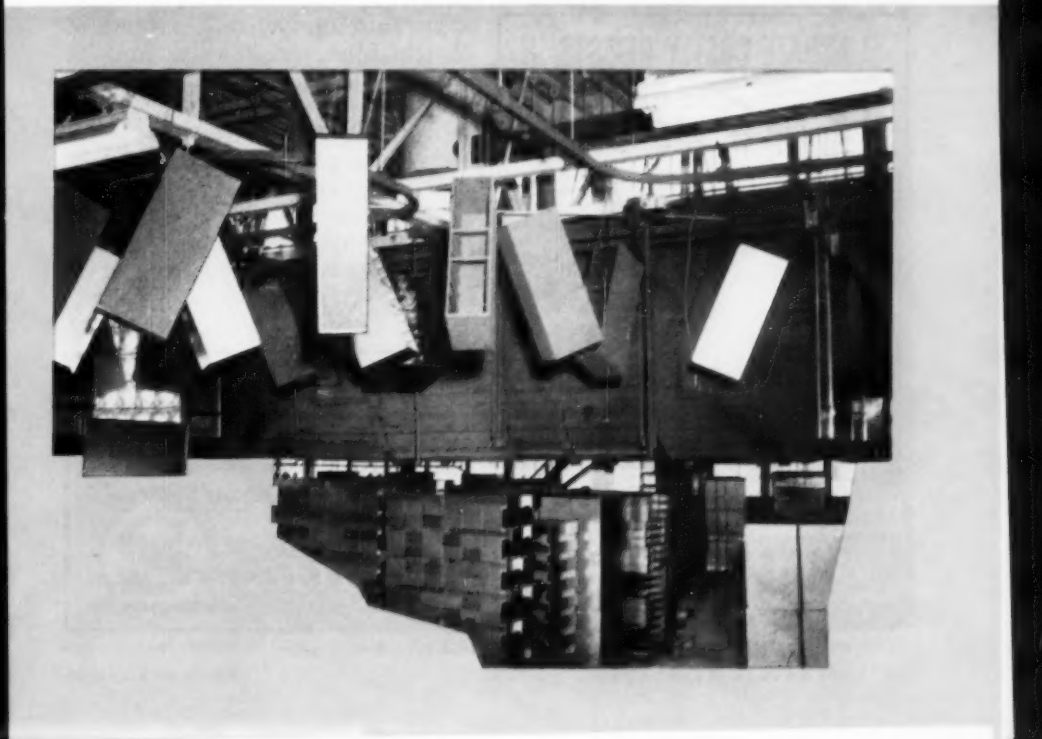


Fig. 13—Design of the Wright finishing department is compact. Portion of two baking ovens and finishing conveyors serving the systems are shown. (Photos 1, 2, 3, 4 and 7 courtesy The Wright Line, Inc., Worcester, Mass. Remainder by PRODUCTS FINISHING.)

The other spray finishing system is identical with that just described. Figure 13 shows a view of the infrared baking oven, also ceiling mounted, which forms an integral part of the second spray finishing system. Normally, one style product is run on one system and another product is run on the other, as can be noted in Fig. 13. The spray booths are located adjacent to one another, and the ovens are mounted close to one another. The conveyors and the loading stations are located in the same general area so that there is no lost motion between the solvent-vapor degreaser and the loading stations of the finishing systems.

Painted products are assembled and packed at the conveyor unloading station when possible. Otherwise, they are unloaded from the finishing system conveyors, and transported to the assembly and shipping area on dollies. Some units are complete when painted, and may be boxed for shipment right at the load-unload stations. Others proceed to the assembly area and then to the shipping area. In all cases the movement of parts or products through the well-designed plant follows an oval path which brings the completed, boxed units back to a point near where the same units entered the plant in the form of steel sheets.

Some product manufacturers find it advantageous to so design their finishing systems that various kinds of paint and various products can be accommodated at one time in the same finishing system. The plant of Wright Line, Inc., is an example of a manufacturer who finds it desirable to provide several finishing systems more or less specifically designed for several groups of products. The three finishing systems are designed to fit in with the plant's manufacturing operations so that increased efficiency and economy of operation are attained.

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Heat Treatment Improves

By **W. G. STEPHENSON, JR.**

Chemical Process Engineer,

Materials Laboratory, Development Dept.,

A.G.T. Div., General Electric Co.

"DON'T CUT THROUGH THE SKIN!" has long been the rallying cry of die casting processors, sometimes with just cause. The rapidity of the die casting process and its ability to form intricate and identical parts is well known and unquestioned. However, this very rapidity and reproducibility sometimes causes trouble in plating.

While he is very vehement on the subject of keeping the "skin" intact, the average die caster often disregards the appearance of minor blemishes in the skin, and when it results in a defective plated finish, he shrugs it off as "poor plating" or "poor buffing."

Published micrographs of zinc-base die castings show that the "skin" consists of a thin layer of small grains formed next to the die surface. The cooler the die surface (within practical die casting limits), the smaller the grain size and the harder the surface of the die casting. Conversely, the farther from the die surface, the larger the grain size and usually the more porous the metal.

If, during the polishing and buffing operations, the skin is cut through, porous areas are sometimes exposed. These areas may lead to blistering or haziness in the plate according to size of the pores and the efficiency of the cleaning cycle, hence the admonition "Don't cut through the skin." This is sound advice when the "skin" is sound. But what of the blemished skin?

Several of the more troublesome blemishes are listed below:

Run Pattern. This condition probably exists in the die castings 100 per cent of the time and is nothing more than the flow pattern left by the metal at the instant of solidification. Most of the time it is not discernible on the surface of a raw die

Plating on Zinc Die Castings

casting or a buffed one. It can be developed easily by a quick dip in a regular chromium plating solution. Occasionally, for reasons unknown, this pattern may be seen through the plating. At this time, the pattern may also be seen on a highly buffed casting in a strong oblique light by an alert plater.

Cold Shot. This condition is caused by two or more converging streams of metal which have become a little too cool to completely mix and so solidify, leaving a typical curleycue pattern which is porous at the touching faces of the streams. This porosity often becomes a void during polishing and buffing and causes blisters, rough plate, or pits. The cold shot is often almost completely hidden by buffing only to "open up" during the cleaning cycle, no matter how mild.

Solder Spots. These are usually caused by small droplets of metal splashing on the surface of the die and solidifying before the main flow of metal arrives. These spots sometimes drop out during buffing. At other times they are pulled loose by the tension of the plated metal.

Blisters. Blisters usually arise from entrapped gas near the surface of the casting. They may be fully developed immediately after casting or develop after plating. The latter kind is more rare but is the most annoying to the plater. Since they do not appear until the plate has built up sufficient tension to lift the thin zinc layer from the remaining zinc base, the plater can do little to avoid the blistering and even less to convince anyone outside of the plating department that it is not his fault. This type of blister can be easily distinguished from the typical plating blister, since it is quite hard, while the plating blister in the thin decorative plates is springy. It is usually small and spherical whereas the plating blister may be any size and any shape; and where the hard blister is broken open, a thin layer of zinc peels away from the parent die casting. The plating adheres very firmly to the thin layer of zinc. This type of surface defect has been attributed to too high temperature of the die during casting, resulting in metal "flutter."

A Typical Problem

The author was associated with a large manufacturer of automotive accessories for over seven years as a plating and chemical engineer. During that time he encountered the above mentioned defects intermittently. One particular instance stands out, both for persistence and the unorthodox method of correction used. The part weighed approximately one pound and was a combination of thin and heavy sections

and deep recesses. The design was such that a cold shot appeared on one side of 95 per cent of the parts. Normal polishing and buffing only partially obliterated the defect. Deeper polishing on different belts from 120 to 240 grit only served to spread the cold shotted effect over a wider area. In spite of various finishing methods tried, and in spite of 0.0006 inch of bright copper and 0.0005 to 0.0007 inch of bright nickel, it was necessary to hand buff 48 per cent of the parts after nickel plating to achieve the desired finish. Since the production of this part averaged 90,000 pieces per month, the problem was worthy of vigorous attack. Needless to say, every "trick in the book" and many more that were not were tried in the plating room with no noticeable improvement. It was then that the plating room foreman, the resident inspector, and the author decided to try an unorthodox approach.

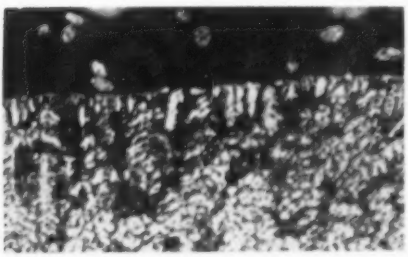
We reasoned that if the surface metal could be flowed more easily during the buffing, it might be possible to compact the cold shot area sufficiently to obtain a smooth plating surface.

Treatment

Knowing that the chilling effect of the die gave rise to a smaller grain size and a higher hardness at the surface, we reasoned that to heat the casting to approximately the original die temperature should cause some change in surface hardness. The first castings were heated to 375 deg. F. for one hour and air cooled. The castings were noticeably softer and gave a dull sound when tapped. However, buffing results were much improved and plated test castings had a much better finish. A large production run was made at the 375 deg. F. temperature. It was found that hand buffing, after nickel, was reduced from 48 per cent to 33 per cent. Various temperatures, times, and water quenching were tried on test strips. Hardness checks and micro-examinations were made.

Results

It was found that an hour at a



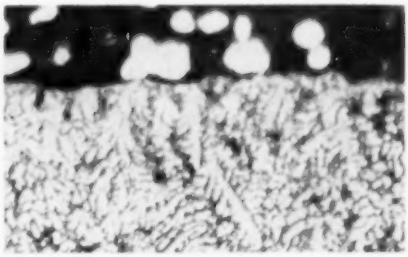


Fig. 1—Photomicrograph of as-cast zinc die castings (left). Note pronounced dendritic structure at surface. Magnification, 500X. (Right) Photomicrograph of section of die casting adjacent to that shown at left after heat treating for one hour at 410 deg. F. and air cooling. Note apparent break-up of dendritic structure. Magnification, 500X. (Photos courtesy General Electric Co. AGT Materials Laboratory, Lockland, Ohio.)

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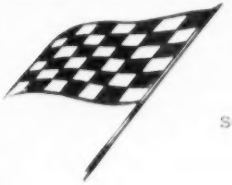

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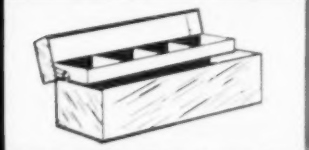

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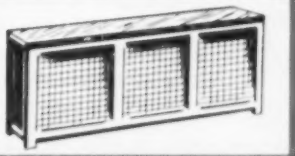

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heat of 410 to 425 deg. F. produced the greatest average drop in hardness, 6 points on the Rockwell 15 T scale. Original hardness averaged 15 T 77.5 and heat treated hardness 15 T 71. Water quenching resulted in a hardness only one point lower than the hardness obtained by air cooling and was not deemed necessary. Microscopic examination showed that the original casting had fine dendritic grain near the die surface and coarse widely spaced grain toward the center of the section. The heat treated sections exhibited a breakup of the dendritic structure and a more evenly dispersed grain showing a tendency to amorphous grain boundaries. The time of heating, over one hour, or the method of cooling had no discernible effect on the microstructure. The author had no access to equipment for taking photomicrographs at that time and no micrographs exist of those early samples. However, Fig. 1 shows a similar change in microstructure by heat treating at 410 deg. F. for one hour. Although the change in micro-structure is not as pronounced as that obtained in the original work, the hardness drop is almost the same, from Rockwell 15 T 77 to a 15 T 72.

To page 34→

CASE HISTORY

BETTER BLACKENING . . . PROFITS UP . . . WITH Swift BLACKENING COMPOUNDS

A famous manufacturer* was unable to blacken malleable iron. Swift blended a blackening compound that permitted a change from an expensive forging to a malleable iron casting. Blackening was complete—durable—inexpensive.

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PENNSALT CLEANER 36,
extra-heavy-duty alkaline soak cleaner, removes bulk of greasy, oily soils on steel or copper. Electro-cleaner bath lasts longer, works more efficiently on smut, impacted soil. 36 won't let soil redeposit.
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PENNSALT CLEANER K-8,
king of electrocleaners, removes toughest impacted soils and pickle smuts. An excellent conductor, K-8 lets maximum current flow at low voltages. Plating rejects drop — production becomes more profitable.
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ELECTROPLATERS: Be sure of complete control over the cleaning cycle, and thus benefit through an amazingly bright, uniform plate . . . a drastic cut in plating rejects . . . true economy in chemicals and operation. Using the new Pennsalt Super-Cycle, you assure yourself a *perfect balance* of high-potency cleaners designed for each other and for your plating line. These cleaners are great separately—but they're SUPER in the Super-Cycle!

WATCH THE SUPER-CYCLE WORK in *your* plating line, and learn the pleasant price facts about all three cleaners bought as a unit! Call the Pennsalt man for a demonstration, or write Metal Processing, Dept. 214, Pennsylvania Salt Manufacturing Company. East: Three Penn Center Plaza, Philadelphia 2, Pa.; West: Woolsey Bldg., 2168 Shattuck Ave., Berkeley 4, California.

Pennsalt Chemicals

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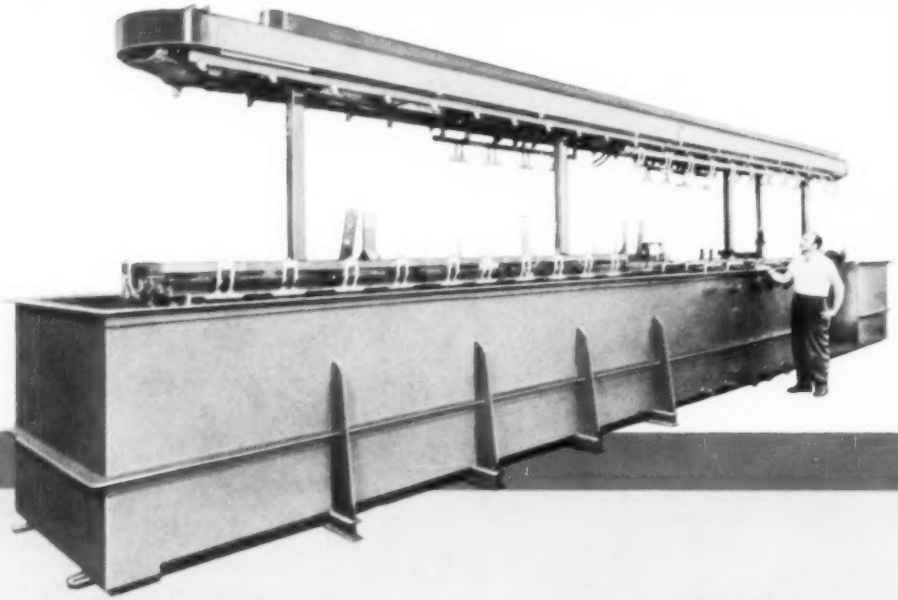
THE CYCLEMASTER



The Udylite Cyclemaster is a new, completely automatic plating machine which offers the greatest production of any machine built with comparable floor size. It is the result of over two years of research and experimentation, and incorporates the famous Udylite features of construction and engineering which are so well accepted in the plating industry.

A VERSATILE, STANDARDIZED MACHINE

The Cyclemaster is a standardized machine. Overall length, width and height of the machine, and depth of tanks, are standardized. This permits lower manufacturing costs with the benefits passed on to the user. The lengths of the various process tanks are changed to accommodate the rack size and the desired cycles of plating or processing in this machine. This means high production plating with a low initial machine cost.

WILL HANDLE MOST PLATING CYCLES

Ideal for cadmium and zinc plating, the Cyclemaster can also be used for copper-nickel-chrome plating and other processes where the cycle will fit into its 41 foot, 6 inch length. It will easily handle 120 racks per hour and take a rack size up to 16 inches by 36 inches. Every phase of the cycle is adjustable and its performance provides perfect uniformity in the plated product. Before building the Cyclemaster, The Udylite Corporation made a survey of the plating industry which shows that this machine will meet the requirements of over 50 per cent of the plating work in shops throughout the country.

ONE MAN CAN OPERATE

Being fully automatic, the Cyclemaster does not require the constant attention of experienced platers. Its operation is so simple any regular shop man can keep it operating at full capacity. One man can handle both loading and unloading.

NEW MULTI-PURPOSE CARRIER

All Cyclemaster units are equipped with a new, standard multi-purpose carrier, which can be used for double spline or single spline racks. Made of special alloy metal, it has high structural strength and highest conductivity. The Cyclemaster carrier can also be easily adapted to inside anode plating if required.

HAS FAMOUS UDYLITE FEATURES

Like other Udylite machines, the Cyclemaster is completely assembled at our plant and run in before being shipped as a complete unit . . . rack spacings can be varied in individual tanks . . . machine is operated by hydraulic mechanism permitting variable speeds for lift, lowering or horizontal movement of racks in and out of solution . . . tanks, which are ventilated, have shields over them which permit a reduction of the amount of air exhausted to the outdoors, cutting down fuel consumption . . . through the simple one-piece cast carrier the current travels only 6 inches from the cathode rail to the rack . . . there are less moving parts on all Udylite machines than on any other type on the market . . . horizontal transfer of the work carriers is accomplished by a simple tee member pusher mechanism that is hydraulically operated . . . *no* chains are used for horizontal work transfer.

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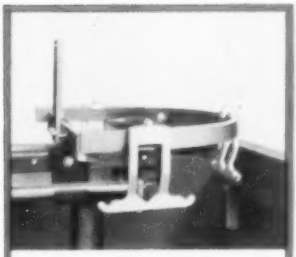

Special alloy metal carriers have high conductivity and will take one or two splined racks.

Compact design requires a minimum of floor space. The Cyclemaster is only 41 feet 6 inches long, 7 feet wide.

EASILY SHIPPED AND INSTALLED

Built on a rugged 4 inch I-beam base, the Cyclemaster can be shipped as a complete unit, or if desired, in two sections, which require only bolting of the two sections together. This permits easy shipment by either truck or rail flat car.

DELIVERY

The standard machine (which is ideal for cadmium or zinc) with 14 inch by 36 inch rack is carried in stock for immediate shipment. However, because of standardized design, excellent delivery can be made even on Cyclemasters where a special processing cycle is required.

● ● ●

For more details regarding the Cyclemaster—or any other Udylite equipment—consult your local Udylite representative or write today to The Udylite Corporation, Detroit 11, Michigan.

Variable rack spacing allows ample room for load and unload—side load or end load available—one man operation.

THE Udylite CORPORATION

You'll Plate Parts Faster *AT LOWER COST*

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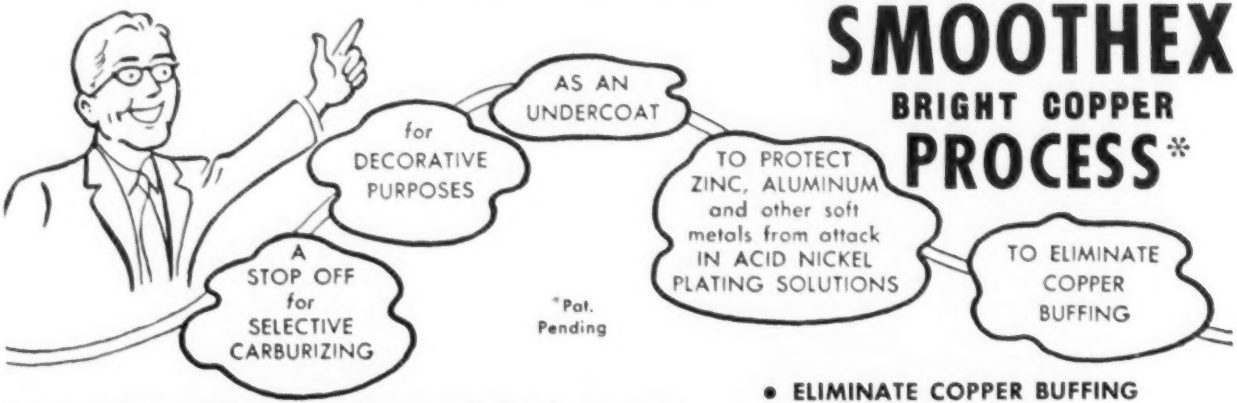
BRIGHT COPPER PROCESS*


AS AN UNDERCOAT
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TO PROTECT ZINC, ALUMINUM and other soft metals from attack IN ACID NICKEL PLATING SOLUTIONS
TO ELIMINATE COPPER BUFFING
A STOP OFF for SELECTIVE CARBURIZING

*Pat. Pending

End your plating solution troubles, now! Switch to the amazing new SMOOTHEX BRIGHT COPPER PROCESS for greater brilliance, speed and top quality, lower cost runs. Your present equipment can quickly and easily be adapted to the Smoothex Process. Send a sample of your plating solution to us, at once, for conversion information.

- **ELIMINATE COPPER BUFFING**
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Production Usage

Large production runs were made using a temperature of 410 deg. F., one hour at temperature and air cooling. The buffing of the raw casting was much improved. Hand buffing of nickel plated parts dropped to 13.5 per cent as compared to the original 48.2 per cent. The cost of buffing this 13 per cent plus the cost of heat treating 100 per cent of the parts was slightly less than one-half the cost of buffing the 48 per cent.

Other dividends soon appeared. Every plater knows that "wet" nickel chrome plates easier, with less rejects, than buffed nickel. The saving in buffed chrome and mis-plates was substantial. Salt spray resistance showed marked improvement. Castings which had not been heat treated, and heat treated castings were plated in the same tanks at the same time and then placed in a standard salt spray cabinet. After a period of time, 72 per cent of the castings not heat treated had developed blisters and 38 per cent of the heat treated castings had developed blisters. The blisters on the heat treated castings were much smaller and fewer in number.

Caution Advised

The above results would lead one to believe that heat treating should be made an integral part of the finishing procedure. However, the problem must be approached with caution for the following reasons:

1. Some thin walled castings may warp during heat treatment and if the walls are thin enough, little or no gradation of grain size may be present.

2. Since the purpose of heat treating is to soften the surface, it may affect the overall strength of the part. The function of the part must be considered and some strength tests run on heat treated parts.

3. Handling of heat treated parts before and after buffing must not be rough, as the softer surface "dings" more easily. This should not be a great problem in an efficient finishing shop.

However, the author does believe that the heat treating of zinc die castings could very well be an excellent emergency procedure in many cases and even a standard procedure in a few cases.

It is hoped that some one interested in this process will systematically investigate the long range effect of corrosion resistance of plated and unplated castings after various types of heat treatment.

Electroplaters often waste up to 60% or more of their gold — through outmoded equipment and inefficient electroplating methods and solutions. We can correct these conditions with Technic aqueous gold solutions and Technic-engineered installations. Consult our Engineering Service without obligation.

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MICCROSOL SPRAY S-2003 IS READY . . . to show YOU the way to profitable spray jobs

You can apply S-2003 with conventional spray equipment.

You can apply 60 mils thickness in one application without sagging of material. If multiple coats are required, a short cure time is all that's needed between applications. A contrasting color can serve for layer identification, if desired.

You can use S-2003 in all plating baths. It has the same toughness—chemical, corrosion, and abrasion resistance as Miccrosol E-1003. Our adhesive systems provide outstanding adhesion to metal surfaces.

Solvent additives are not necessary. S-2003 is 100% solids and is sprayed as received. Time consuming and expensive adjustments are unnecessary. Problems of material instability and film cracking are eliminated. There is no solvent loss and less operator fatigue with Miccrosol Spray S-2003.

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MICHIGAN CHROME *and Chemical Company*

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For more data circle 140 on Reader Service Card

Question: *Please give us the names of firms able to supply coated steel strip in thin gauges in coils. We are getting into production of a new type flexible metal door and are now using galvanized metal formed to our particular shape. We want to use baked enamel finished strip in a range of colors.*

W. M. W.

Answer: We are pleased to send you the names of several companies able to supply coils of painted steel strip. As you may have noted in recent articles in PRODUCTS FINISHING, a number of industries are now painting strip or coiled metal by roller coating, and then forming it. As your production requirements increase, you may find it advantageous to install roller coating equipment in your plant.

———— *fc* ————

Question: *We are expecting to relocate our present plating room. In doing so, we should like to incorporate the latest in facility and service layout. This would include exhaust duct location (overhead or underground?), rectifier location (centrally or individually?), and, of course, the location of lines such as steam, air, water, and electricity. It also includes acid and cyanide drainage locations for flexibility as well as maximum safety. We would appreciate any recommendations you might make, and would like some references to articles on plating room layout.*

L. F. M.

Answer: Although other considerations at your plant may dictate whether your exhaust ducts are located overhead or underground, the neatest installation (and most efficient from an air movement standpoint) is the one in which the exhaust ducts are located below the plating tanks. With regard to power source location, you are no doubt aware of the trend to locate motor generator sets in a completely enclosed location near, but separate from the actual plating tanks. In the case of rectifiers, however, again depending upon your local situation, you may find it more advantageous to locate rectifiers adjacent to the tank or tanks which they are expected to power.

Steam, air and water lines can be safely and conveniently located below the operating floor, but bus bars to furnish power for the plating operation or bus ducts to provide electricity for lights, motors, and so on, are normally located above the tanks.

Acid and cyanide, if possible, can be combined in a single drain sump to effect partial neutralization prior to final treatment. Usually the cyanide concen-

tration is sufficiently low to make this possible.

In addition to these comments, we are forwarding tear sheets of the following articles published in PRODUCTS FINISHING which may provide you with additional background information on plating room layout: "Plan Your Finishing Facilities and Operations," "Recent Developments in Plating Methods and Equipment," "Adequate Ventilation in the Plating Department," "Engineering the Plating Room," "Drainage System for Plating Room Wastes," and "How to Avoid Electroplating Equipment Failures due to Stray Currents."

———— *fc* ————

Question: *I would like to know if there is a high and a low brass plating solution; the formula of a brass plating solution and the anodes to use; the procedure for cleaning steel prior to brass plating; and, the names of companies from whom testing equipment can be purchased. The company for which I am now working is using steel in place of brass because of the high cost of brass. I would appreciate any information you can give me.*

F. L. B.

Answer: In response to your recent letter, we can advise you that a brass solution can be regulated to plate either a yellow brass or a red brass by changing the solution composition, temperature and voltage. The formula for a brass plating solution, and voltage as given in Blum and Hogaboom's "Principles of Electroplating and Electroforming," is as follows:

Copper cyanide	3.6 oz./gal.
Zinc cyanide	1.2 oz./gal.
Sodium cyanide	7.5 oz./gal.
Sodium carbonate	4 oz./gal.
Temperature	95 to 122 deg. F.
Current density	5 amp./sq. ft.

This bath is the so-called high brass or yellow brass plating solution. The formula for a low brass or red brass plating solution is as follows:

Copper cyanide	7.2 oz./gal.
Zinc cyanide	1 oz./gal.
Sodium cyanide	9.5 oz./gal.
Rochelle salt	6 oz./gal.
Sodium carbonate	4 oz./gal.
pH	10.3
Temperature	110 to 130 deg. F.
Current density	10 to 20 amp./sq. ft.

Small additions of ammonia are made to control the color. Anodes of the same composition as the desired deposit should be used.

For further information on brass solutions and anodes, we are enclosing the names and addresses of several companies who will be able to help you in this matter.

We are also enclosing the names and addresses of companies from whom testing equipment may be purchased.

The cleaning of steel prior to brass plating involves no special procedures. A typical cycle might be:

1. Alkali clean, direct or reverse current.
2. Water rinse.
3. Acid dip, 10 per cent sulfuric.
4. Water rinse.
5. Cyanide dip.
6. Brass plate.

Notes on the Use of Water for Cleaning and Electroplating

By EDWARD ENGEL

NATURAL WATERS are seldom suitable, without treatment, for metal processing baths. Water usually contains organic matters undergoing decomposition, which act as reducers to deprive other bodies of oxygen. These may be removed by adding activated carbon and filtering. In this process, wetting agents will be absorbed, and must be replaced.

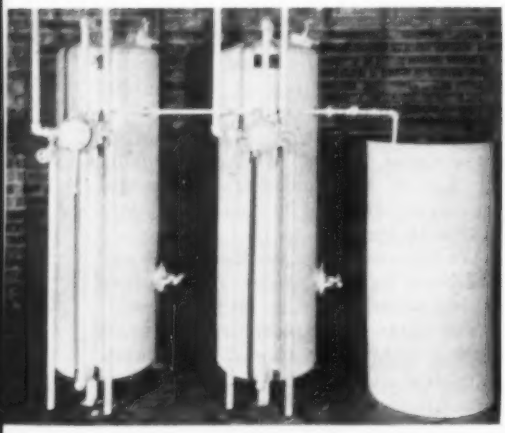


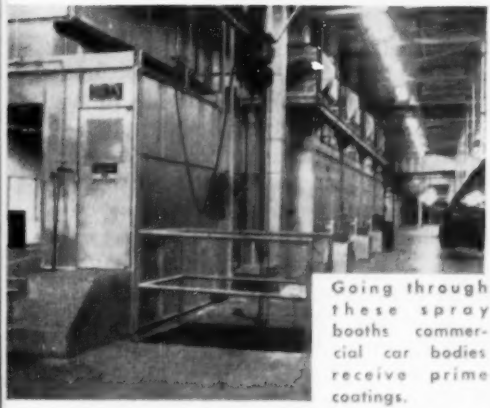
Fig. 1 — Industrial Zeolite Water Softener operates automatically, the regeneration of ion-exchange material taking place without the operator's attention. (Photo courtesy Industrial Filter & Pump Mfg. Co., Chicago, Ill.)

Water containing chlorides, such as city tap water, is objectionable for plating baths such as chromium and silver, and chromic acid anodizing baths. In the latter instance, Army-Navy Spec. AN-QQ-A-696a permits a maximum of 0.05 per cent (500 parts per million) of insoluble matter and 0.10 per cent sulfates. The usual chlorine content of tap water is under 200 p.p.m.; nevertheless, water replenishments for evaporation and dragout losses may build up chlorine content to amounts over the allowable maximum.

Metallic impurities, such as iron, magnesium, and copper compounds often present in natural water cause difficulties in many plating baths. Iron may cause poor deposits from acid copper, silver and gold baths.

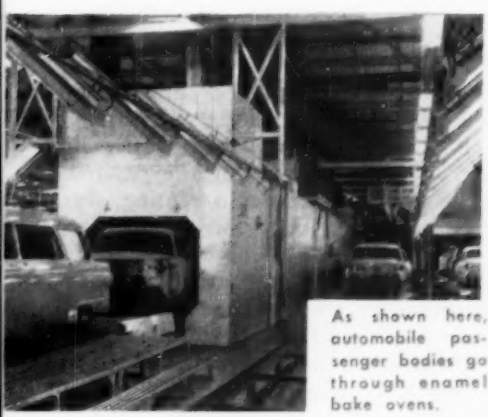
Iron and magnesium are detrimental to nickel plating baths. Iron embrittles the deposit, and magnesium sulfate, although improving the throwing power of the solution, softens the deposit. Nickel electrolytes are operated at 120 to 160 deg. F. At the latter temperature, the water replenishment approximates five gallons per 8 hours of operation per 100 gallons of electrolyte. Therefore,

Watch 'em go by —
when *FINISHED* in P-D equipment
for a Fine Future



Going through these spray booths commercial car bodies receive prime coatings.

A major automobile manufacturer has recently completed construction of a plant and facilities in a southern city. In this new plant a complete finishing system has been installed by PETERS-DALTON. P-D engineers laid it out on a one floor level to conform with the manufacturer's precept. Automobile bodies pass through the several finishing stages, including metal washing, wet sanding, bonderizing, prime coating and final multi-color paint finishing, in rapid succession. The assurance of this smooth and safe production is largely due to the P-D Hydro-Whirl Method of cleaning paint-laden air. The entire finishing system is set up to meet the public's demand for varied and multi-colored automobile finishes without any delays or changeovers that could cause production schedules to bog down. To do this requires special equipment — designed, engineered, and fabricated by a firm which has established its reputation of having the knowledge and experiences so essential for meeting special finishing needs.



As shown here, automobile passenger bodies go through enamel bake ovens.

Manufacturers in widely varied phases of industry recognize the efficiency of P-D design and engineering, knowing that Peters-Dalton specializes in the installation of tailor-made finishing systems to meet all industrial requirements—from a single spray booth to the development of complete finishing systems such as this.

We'll be glad to tell you more — just write, wire or phone.

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- *Hydro-Whirl Paint Spray Booths*
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such impurities as iron and magnesium may build up to detrimental proportions. Copper may also become too concentrated for optimum results. Additions of chelating agents to certain of the nickel baths may complex copper, iron and magnesium so as to render them harmless.

Chelating agents are organic compounds which have a role similar in water treatment to the role of the inorganic sequestering agents such as Calgon. These compounds remove metal ions by combining them in a complex molecule which is harmless in the solution. Thus the metal is still present, but not in a form which can interfere. The organic chelating agents do essentially the same thing, except that they tie up the offending metal ion in an inner ring of a complex organic molecule.

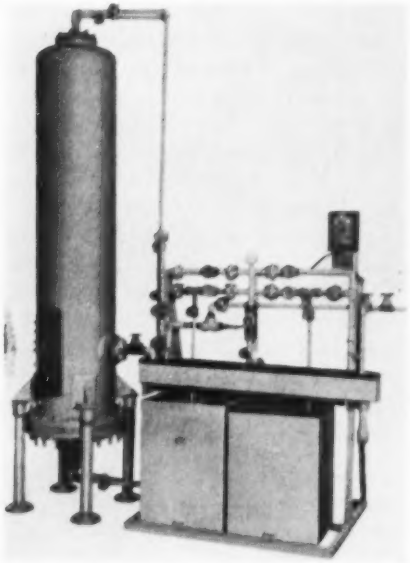


Fig. 2—In operation of the Barnstead mixed bed water demineralizer, the raw water enters the top of the column, flows down through mixture of cation and anion resins. By ion-exchange, particles of cation resin exchange the salts in the water for acids and the anion resins capture these acids. Demineralized water flows from the bottom of the column. (Photo courtesy Barnstead Still & Sterilizer Company, Boston 31, Massachusetts).

A commercial brand of chelating agent, "Versene," is available in a number of forms for various applications, depending upon the pH range being used and the metal impurities that must be removed. They may be made specific in their action, that is, certain forms will complex some metals preferentially to others under the proper conditions. Chelating agents are very stable, and are not attacked even by strong alkalies.

In some plating baths, such as the Rochelle copper electrolyte, the addition of about 10 grams per liter of Versene will complex undesirable metallic impurities so as to increase the bright current density range.

The addition of a maximum of 10 grams per liter of Versene to the fluoborate tin bath at 0.2 pH, 80 deg. F., 3 A.S.F., improves the plate.

In order to control the desired karat deposits in gold plating, the addition of a small amount of Versene will suppress copper.

The copper Versenate strike bath complexes iron and other deleterious elements, and the resultant life of the solution and the character of the deposit is improved. In addition, the latter solution is nontoxic.

In order to further emphasize how small an amount of a contaminant is required to disturb a plating bath, the silver plating bath is presented

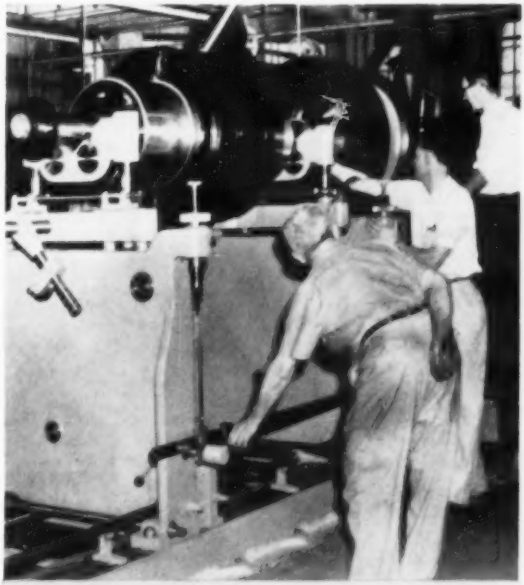
....brings you extra years of dependable, trouble-free low-voltage power

Chandeysson

DYNAMIC BALANCING DETECTS AND CORRECTS VIBRATION!

Massive motor generator rotors weighing thousands of pounds are balanced to within fractions of an ounce by this modern equipment in the Chandeysson plant. By spinning the rotors, even the slightest out-of-balance is detected and can be corrected. The result is vibrationless dc equipment that promotes perfect commutation and reduces installation cost . . . advantages that can never be obtained by static balancing such as is common in the industry.

Precision methods such as this are used throughout the Chandeysson manufacturing operation. Unified responsibility for the manufacture of every component . . . from selected raw materials to the finished product . . . is in the hands of skilled men with decades of experience in building low-voltage generators. Our aim in engineering is to *eliminate* design defects . . . rather than to correct for them. This is why more and more "Industry Leaders Choose Chandeysson!"



MAKE US PROVE to you that a Chandeysson Motor Generator set is your most economical and dependable source of low-voltage dc current. Mail this coupon today . . .

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as an example. If an excess of 0.0001 oz./gal. of carbon disulfide brightener is used, it causes a discolored and hardened deposit. The stated excess is equivalent to only 0.75 p.p.m. Many waters have 50 p.p.m. of carbon disulfide, which is over 60 times the concentration stated as being troublesome.

Water hardness constituents lower the pH in alkaline or cyanide baths, destroy the free cyanides and make sludges, and cause difficulty in periodic reverse copper plating. Caustic soda and potassium hydroxide, if not introduced directly in the bath, find their way there by the decomposition of their cyanides. They may be used in making up the amount of free alkali required in the solution. Free alkali in a solution is termed protective, because it protects the cyanide from decomposition and loss from acid carryover.

Water - hardness is a term used to designate the degree of calcium and magnesium compounds in water. The degree of hardness is referred to as the number of grains of hardness per gallon (g.p.g.).

Water is designated as being of a "temporary" or "permanent" hardness, or as being "soft." The term "temporary" is used for hard water in which an increase in pH occurs in the

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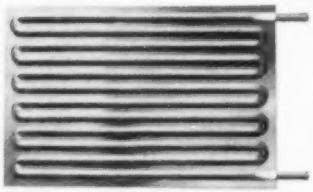

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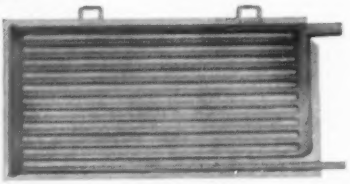

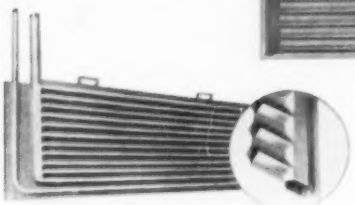

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give faster heat transfer at 50% savings

These streamlined units take less tank space, provide more prime transfer area than pipe coils to heat faster for less money.

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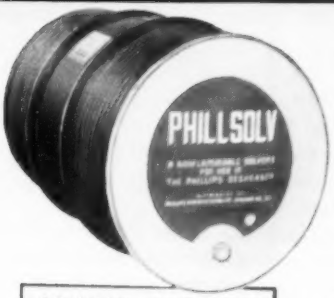

✓ YOU USE LESS SOLVENT

✓ YOU GET FASTER CLEANING CYCLES

✓ YOU GET SAFER OPERATIONS

SOLVENT CHECK LIST	YES	NO
FAST DRYOFF OF PARTS?	☐	☐
COMPLETE CLEANING?	☐	☐
MEET SAFETY REQUIREMENTS?	☐	☐
PREVENTS CORROSION?	☐	☐
MINIMUM ODOR?	☐	☐
LOW VAPOR LOSS TO ATMOSPHERE?	☐	☐

CHANGE "NO" ANSWERS TO "YES" with PHILLSOLV

These are real . . . tangible benefits that come as a result of *PHILLSOLV'S* more positive cleaning properties. *PHILLSOLV* has a high boiling point which causes longer condensation of vapor on metal surface; 35% more washing action. *PHILLSOLV* vapor has a higher density. There's less solvent dragout, less danger from fumes. Flammability rating on *PHILLSOLV* is zero so the fire hazard is eliminated.

And, best of all, PHILLSOLV costs you less to use because of these benefits. It pays off in the form of higher production rates, thus lower unit cleaning costs. It's good business to clean with *PHILLSOLV!*

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water due to the addition of an alkaline chemical or because of a loss of carbon dioxide due to an increase in temperature or through aeration. The fairly soluble calcium bicarbonate is changed to the less soluble carbonate. Water with sulfates unaffected by heating is said to have "permanent" hardness. "Soft" water refers to water with relatively no hardness constituents.

In certain plating solutions and cleaning baths the use of hard water and unpurified water results in rinsing difficulties, scum, and the formation of insoluble metallic soaps. Poor rinsing following the cleaning operation may cause subsequent plated deposits to have poor adherence, blisters or spottiness. The rinsing difficulties usually occur from insoluble calcium and magnesium compounds on the work.

Water may be rendered fit for use in boilers and for metal treating solutions by a number of methods.

Iron content may be reduced by zeolite and glyconic acid treatment if the water is not too hot. Versene and other specialized chelating compounds are effective with hot or cold water.

In general, there are five commercial methods for softening water:

1. The precipitation method for the elimination of calcium and magnesium compounds relies on the use of chemicals and filtration. The soda-lime treatment is an example of this method.

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With driQuik
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DRY CLIME LAMP CORP. Greensburg, Ind.
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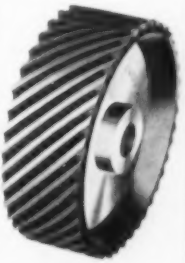

This precision machined and accurately balanced wheel is easily and quickly knocked down and reassembled for economical tire replacement or change.

You replace only the tire when necessary and not the entire wheel. Choose from a complete assortment of treads in a wide variety of Durometers to best suit your grinding or polishing requirements. Our engineers will gladly make specific recommendations.

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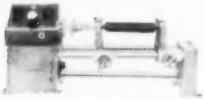
All Chicago Rubber wheels are assured perfect dynamic balance for safety and efficiency on the job.



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2. The zeolite type of water softener is a conversion method.
3. The ion exchange method produces virtually mineral-free water.
4. Sequestration: Hexametaphosphate and certain other polyphosphates will soften water as will Calgon and glyconic acid.
5. Chelating compounds will complex the undesirable elements just as effectively in hot water as in cold water. Even at ordinary temperatures the Versene chelating compounds are very effective. In addition there are other Versene type compounds which are specifics for preferentially complexing iron, copper and other metallic impurities.

Discharge of electrolytes, rinse waters and other waste liquids into streams or sewers may become the subject of more stringent municipal and state regulations. Therefore, it may become necessary to condition discharges by such means as suggested below.

1. Neutralization of acids or alkalies to maintain a pH range of 5.8 to 8.2 at discharge. Strong acids and alkalies may be neutralized.

2. Exclusion of cyanide sludges or of poisonous compounds of chromium, copper or zinc from discharges. The use of still rinse baths prior to rinsing in running water tanks will greatly reduce cyanide or other toxic compound concentrations in the waste water. The still rinse bath is used to replenish operating baths.

3. Metal salts may be flocculated or precipitated with alum or ferric chloride in combination with lime. Chromium compounds may be rendered harmless by treatment with barium sulfide followed by lime. Chromic acid may be reduced by

To page 50→

★ ★ ★

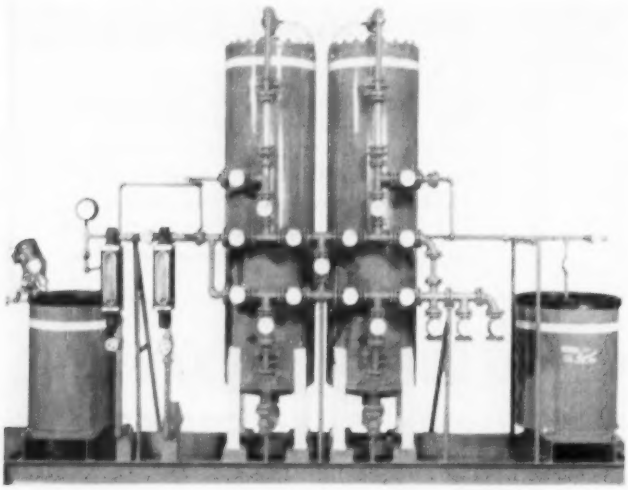

Fig. 3—The Stevens-Dorrco d-i Cell Ion Exchange Unit is useful in processing metal finishing wastes, especially in the recovery of chromium and other metals. Unit helps alleviate water pollution and at the same time recovers valuable materials from waste water. (Photo courtesy Frederic B. Stevens, Inc., Detroit.)

SANDER NEWS

New Orbital Model

•

Fast Material Removal

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Wet or Dry Sanding

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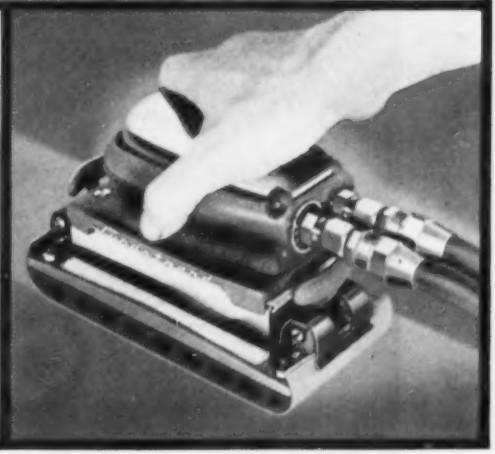
Sturdy Sundstrand Construction



The word is out! This new Sundstrand Air Sander . . . the *only* orbital sander with built-in water attachment for wet sanding—has had a sensational reception. It's fast (6000 cycles a minute) . . . convenient (palm lever controls both air and water) . . . minimizes vibration, reduces fatigue (counterbalanced precision manufacture) . . . small, compact (easy to use on small or large areas) . . . sands up to edges and moldings (doesn't bounce off). Yet it needs only 6 to 9 cfm of air. See your local supplier, or write for new bulletin. Ask about Sundstrand Straight-Line Sanders for finer finishes, too . . . complete, varied line available!

SUNDSTRAND

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a name to remember in **AIR SANDERS**

Pneumatic Division, Sundstrand Machine Tool Co., Rockford, Illinois

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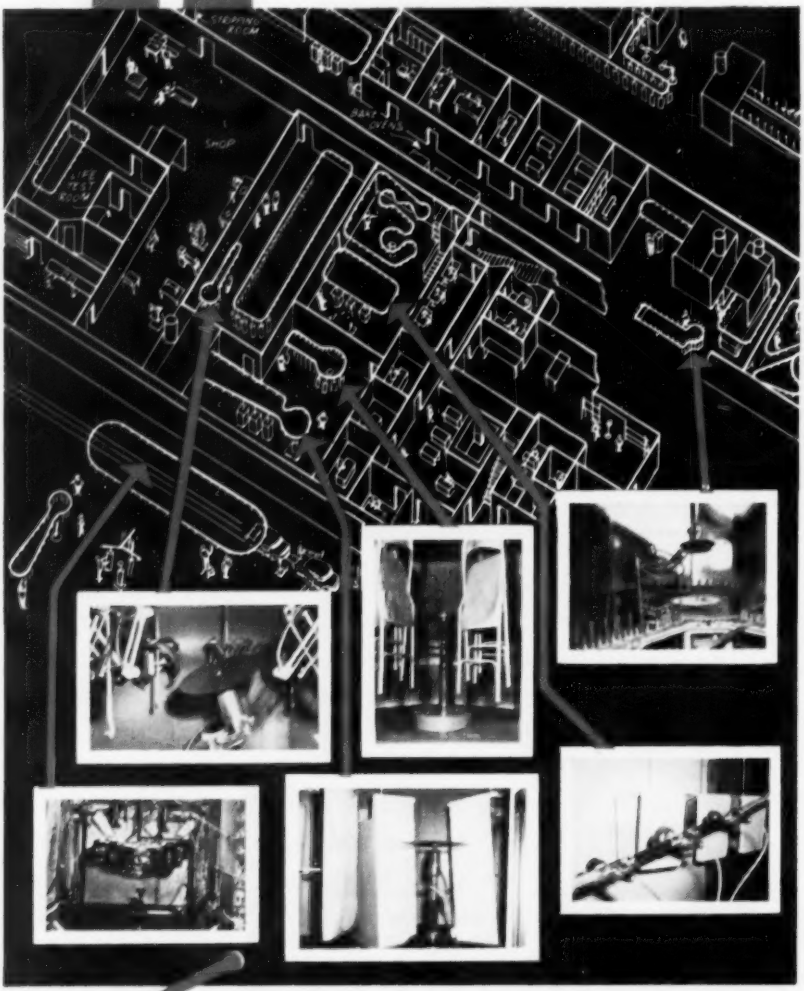
22 Laboratories at YOUR service



YOUR JOB, LIKE THESE SHOWN ABOVE, WILL BE TEST PROVEN

under simulated production conditions to determine cost-saving benefits and other advantages. Ransburg also maintains other test facilities in Los Angeles, London, England; Bad Hersfeld, Germany; Paris, France and Sydney, Australia.

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Let us make laboratory tests and prove the advantages and cost-saving benefits of painting YOUR products AUTOMATICALLY with one of the Ransburg Electro-Spray Processes.

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● **First,** Ransburg sales engineers will make a survey in your plant to check the possibilities of using Electrostatic Spray Painting on your products. Next, you will send samples of your unpainted products—with paint—to the Ransburg laboratories in Indianapolis.

Here, the technical staff takes over. The Ransburg Engineering staff—which includes PH.D's and Masters in Physics, Science, Electrical, Mechanical and Chemical Engineering—makes a complete study of your job. Not only do they have the necessary academic training, but they have the "know how" gained from years of actual experience in the field. Ransburg, you know, was the pioneer in Electrostatic Spray Painting 15 years ago. Engineers and well-qualified technicians have at their disposal every facility for conducting complete tests, simulating your own production conditions. They'll decide which type conveyor is best suited for your job. (There's a conveyorized lab set-up—22 in all—to handle products ranging in size from automobile bodies and chassis to small components, such as window hardware.) They'll design workholders, if necessary, and determine exactly how your job can be run to your best advantage. Details, such as fixture spacing, will be worked out too.

After preliminary studies and tests, you are invited to Indianapolis to see your job run in the lab. If you wish, photos and even movies of your test run can be made and furnished for your own production people to study. You see first-hand what Ransburg Electrostatic Spray Painting can do for you in your own plant.

YOU GET PAINT AND LABOR SAVINGS

Paint usage is accurately measured during the demonstration. The Ransburg No. 2 Process will provide savings up to five times the paint mileage of hand spray. And, one unit can do the work of many hand sprayers. You will see the improved, uniform quality of the work . . . you'll know what kind of increased production to expect, and you can recognize labor savings. ALL OF THIS WITHOUT OBLIGATION.

Ransburg service doesn't end there. After the equipment is installed in your plant—with our supervisory help—we will train your operator and continue to work with your finishing department. Our technically-trained field service engineers are always available to assist with any of your finishing problems.

Briefly, that's our story. Now it's your move. Call or write.

Dept. P

Ransburg

ELECTRO-COATING CORP.

Indianapolis 7, Indiana

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sulfur dioxide and precipitated by alkali.

4. Cyanide waste may be oxidized in a closed tank with potassium permanganate. The alkaline chlorination process is a popular means for treating cyanide waste.

Water is not inexpensive nor is it always plentiful. It is possible to maintain effective rinses and at the same time decrease the water consumption.

Running rinse water containing acid may be siphoned or pumped to an alkali rinse tank; or, water from a final rinse may be flowed to a less critical rinse tank.

Spray water tanks often take the place of two or more running water tanks for initial rinses. This is especially true in dye-coloring rinses as used in anodizing processes.

Running water rinses should be flowed to waste through or over a dam situated at the end of the tank, and so placed that the edge of the dam is above the outlet. Water should enter at the opposite end from that of the outlet, and in addition, some water should enter at the bottom.

The amounts of contaminants present in cleaning and plating solutions are multiplied by the effects of "drag-out" and "drag-in" and by evaporation.

Drag-out and drag-in: Excessive withdrawal and additions of water and solutions may occur from poorly designed plating racks, work incorrectly positioned on the racks, insufficient or poor masking of racks, insufficient time allowance between rinsing and subsequent operations, and low wetting power of the solution. If the rinse waters are low in mineral content, and if the final rinse is a spray rinse, then the drag-out or drag-in will be minor. The make-up water which is run into a bath to replenish for evaporation is another cause of contamination.

COATINGS
for Zinc and Cadmium

K.E.R. CHRO-MITE® #4
Gives mirror brite finish. Protects against corrosion. Stain resistant. Outperforms similar coatings.

OLIVE GREEN G. C.
Maximum corrosion protection. Excellent paint base. Will pass severest specifications.

ZINLUX (for zinc barrel and still plating)
Brightens plate and purifies bath. Still and barrel plate. Excellent throwing power.

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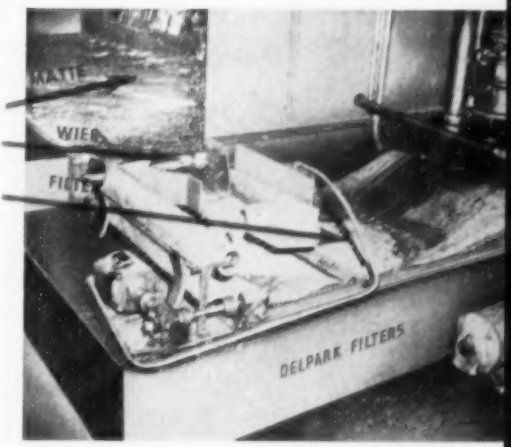

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Electroplating on Magnesium

THERE ARE NUMEROUS INSTANCES where the lightness and mechanical properties of magnesium alloys would be desirable for some application where they have not been used because of the difficulty in plating on magnesium and the poor performance of plated magnesium in corrosion tests. In recent years, however, improvements in the fabrication of magnesium parts, both castings and wrought forms and development of improved pretreatment and plating techniques, have induced new interest in the use of plated magnesium parts. In an article by H. K. DeLong in "Metal Progress," *67 No. 4*, 102, procedures for plating on magnesium which have proved to be successful in production are described, and the results of corrosion tests on parts thus plated are discussed.

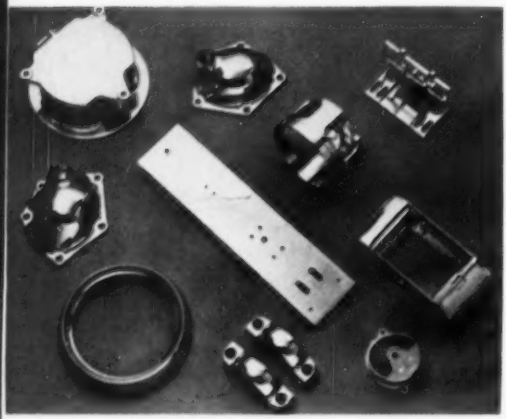
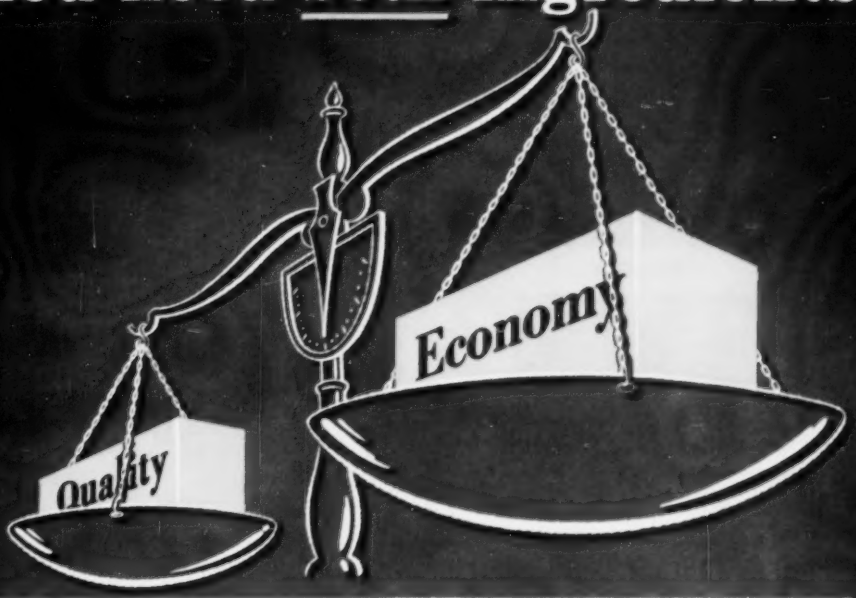


Fig. 1—These typical magnesium die castings are plated with chromium for appearance.

It is stated in this article that in addition to the decorative plating (Fig. 1) which is found on automotive parts, transcribing machines, and rule cases, magnesium is plated for wear resistance in the manufac-

You need both ingredients



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Ketone-based solvent systems are inherently superior for lacquer formulations because of their high solvency for both nitrocellulose and vinyl resins.

High-purity ketones yield solutions of exceptionally high solids content, or permit greater diluent content . . . with either aromatics or aliphatics. In any formulation, ketones impart excellent flow, blush resistance and gloss.

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The Shell Chemical "quality group" of solvents includes MEK, MIBK, EAK, MIBC, IPA and Ethyl Alcohol.

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Fig. 2—Magnesium printing plate is hard chromium plated to increase wear resistance.

ture of printing plates (Fig. 2) and to reduce the galvanic corrosion which occurs when magnesium is placed in contact with other metals in a corroding medium. In the latter case galvanic corrosion can be prevented if the magnesium is completely covered by a thick impervious layer of a more noble metal so long as the coating metal remains intact. The minimum plate for preventing galvanic corrosion is said to be a composite of 0.0005 inch copper, 0.001 inch nickel with an optional chromium flash. For longer protection a coat of paint is recommended.

The steps for plating of magnesium are as follows:

1. Surface conditioning
2. Activation
3. Zinc immersion coating

For Dust Free Finishes!

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Cut off any size piece to use as needed.

IN BULK

Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

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Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

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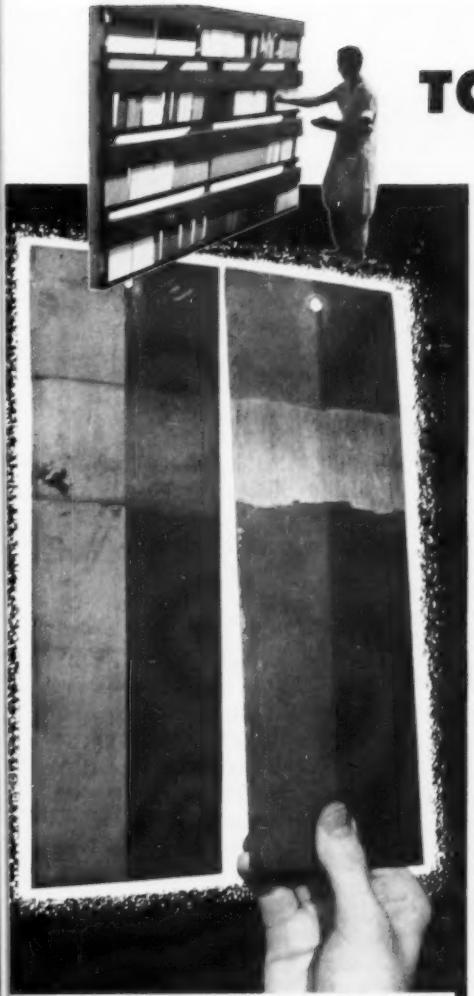

The durability or weather test, subjects paint test panels to direct sunlight, rain, wind and extremes of heat and cold. ZINOXIDE primer used on the right hand panel, withstood 14 months of exposure, proving highly superior corrosion inhibiting characteristics when compared with the best of other primers used for the same service.

The other sample, at left, developed considerable corrosion on the undersurface.

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...helps improve industrial primers

The old saying, "proof of the pudding is in the eating" describes the durability tests employed at Lowe Brothers. Conditions closely duplicating those in actual service are a vital part of testing all new finishes as well as the continual improvement of existing products.

A recent product development program carried out by our Technical Department is a good example.

Extensive tests were made on many types of pigment materials to develop a superior industrial primer. The result—ZINOXIDE—a primer with highly superior corrosion inhibiting properties ideal for the surface protection of forgings, castings and sheet steel products.

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INDUSTRIAL FINISHES

also Style-Tested paints for the home

4. Copper plating
5. Subsequent plating (using standard procedures)

SURFACE CONDITIONING. When a smooth and highly polished surface is required, it is recommended that the parts be polished and buffed in a manner similar to that used for zinc base die castings. Grease and buffing compounds are then removed by the methods usually used for mild steel, except that when alkaline cleaners are used, anodic cleaning must be avoided because of the film which this procedure forms on magnesium surfaces. Cathodic cleaning is entirely satisfactory. After cleaning, the parts are pickled in one of a number of solutions, depending upon whether castings or wrought forms are being processed. The author recommends that castings be pickled for 15 seconds to three minutes at room temperature in either (a) a solution of chromium trioxide, 280 g/l; 70 per cent nitric acid, 25 ml/l; hydrofluoric acid, 8 ml/l; or (b) undiluted 85 per cent phosphoric acid. Wrought forms are pickled for 30 seconds to two minutes at room temperature in either (a) a solution of chromium trioxide, 180 g/l; sodium nitrate, 30 g/l; calcium fluoride, 2.5 g/l;

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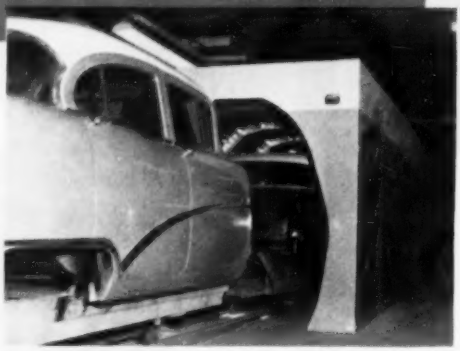

HERE'S WHY...

CLEPCO Quartz Paint Ovens are based on the use of special CLEPCO Quartz Heaters designed to emit that part of the heat spectrum most readily absorbed by paints.

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we put it to work and keep it working effectively

The chemical treatment of metals and metal parts—to prepare them for further processing, to protect them, to beautify them—has grown from a haphazard operation to a highly technical one. Supplying the chemical ingredients is a relatively simple job. Putting them to work and keeping them working effectively in your plant demands the skill of an experienced organization. We have that organization.

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CHEMICALS ACP PROCESSES

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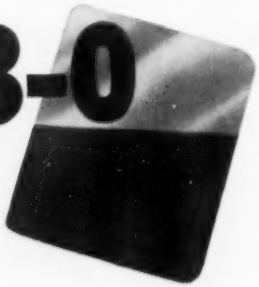
or (b) glacial acetic acid, 28 ml/l; sodium nitrate, 80 g/l. Where no dimensional change can be tolerated, as with printing plates, it is recommended that the parts be cleaned for two to ten minutes (depending upon temperature) in a solution of chromium trioxide, 180 g/l, at room temperature to boiling.

ACTIVATING. To provide a surface which will receive a uniform zinc deposit in the subsequent step, it is necessary to immerse the cleaned and pickled parts in an aqueous solution of phosphoric acid, 200 ml/l and sodium, potassium, or ammonium bifluoride, 100 g/l, immediately before the zinc immersion treatment.

ZINC IMMERSION COATING. In order for an adherent metal coating to be deposited on magnesium by immersion it is necessary that the magnesium hydroxide film be first removed and that the metal be then deposited at a controlled, slow rate. Acid solutions deposit the metal too rapidly and most alkaline solutions above pH 10.6 do not dissolve the magnesium hydroxide. It was discovered, states the author, that alkaline pyrophosphates below pH 11.0 readily react with magnesium oxide to form water-soluble compounds. The rate of deposi-

Du-Lite 3-0

a proven BLACK FINISH for STAINLESS STEEL



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Du-Lite 3-0 blackening bath can be operated at 240°F or less, much lower than other processes require for blackening stainless.

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Low-temperature 3-0 process colors without surface damage, virtually eliminates costly spoilage of finished parts.

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EASY, SAFE OPERATION
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METAL FINISHING SPECIALISTS

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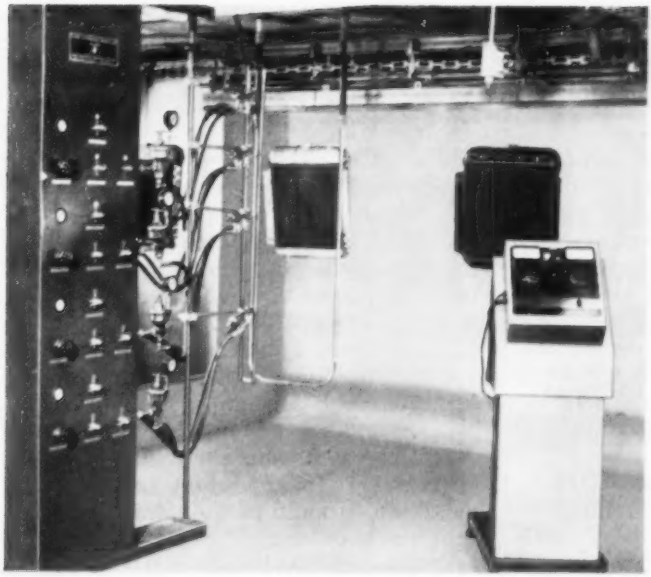

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"—solution must be kept as free as possible from metal impurities—."

tion of zinc from this solution may be controlled with inhibitors, small amounts of fluoride being particularly effective for this purpose. The adherence and uniformity of the zinc deposit is also affected by the zinc-to-pyrophosphate ratio and the carbonate concentration which is used to adjust and maintain the pH.

The following is the solution recommended in the article:

Zinc sulfate, monohydrate	30 g/l
Tetrasodium pyrophosphate	120 g/l
Potassium (or sodium) fluoride	7 (or 5) g/l
Sodium carbonate	5 g/l

The bath is prepared by dissolving the zinc sulfate in water at room temperature, heating to 140 to 180 deg. F., slowly adding the tetrasodium pyrophosphate, and agitating the solution until the precipitate which initially forms redissolves. The fluoride is then added, and finally, the carbonate in an amount such that the pH of the bath is between 10.0 and 10.6 (preferably 10.2-10.4). The pH values are those determined colorimetrically; electrometric values are about 0.5 unit lower.

The bath is operated at 175 to 185 deg. F. with mild agitation with a treatment time of three to ten minutes depending on alloy composition, temperature and freshness of the bath, and pretreatment of the parts. In any event the treatment time should be the minimum necessary to obtain complete coverage of the surface by about 0.0001 inch of zinc. The solution must be kept as free as possible from metal impurities, with contamination by chromium to be particularly avoided. The author indicates that this solution is satisfactory for all conventional magnesium alloys, but that the fluoride

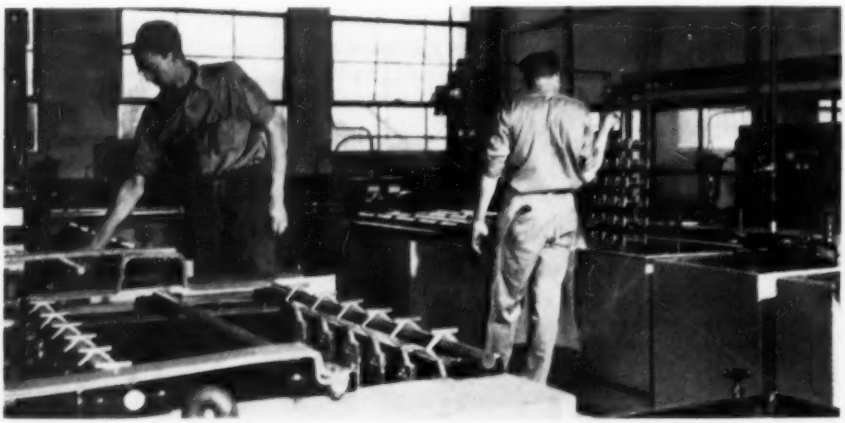

Fig. 3—A typical installation for the production electroplating of magnesium base castings.

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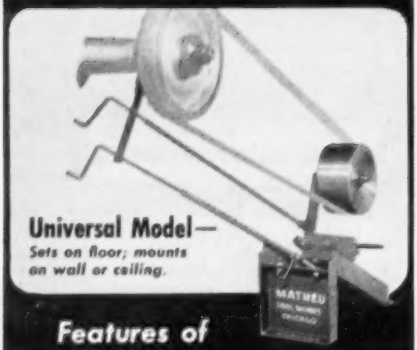
BACKSTAND IDLERS



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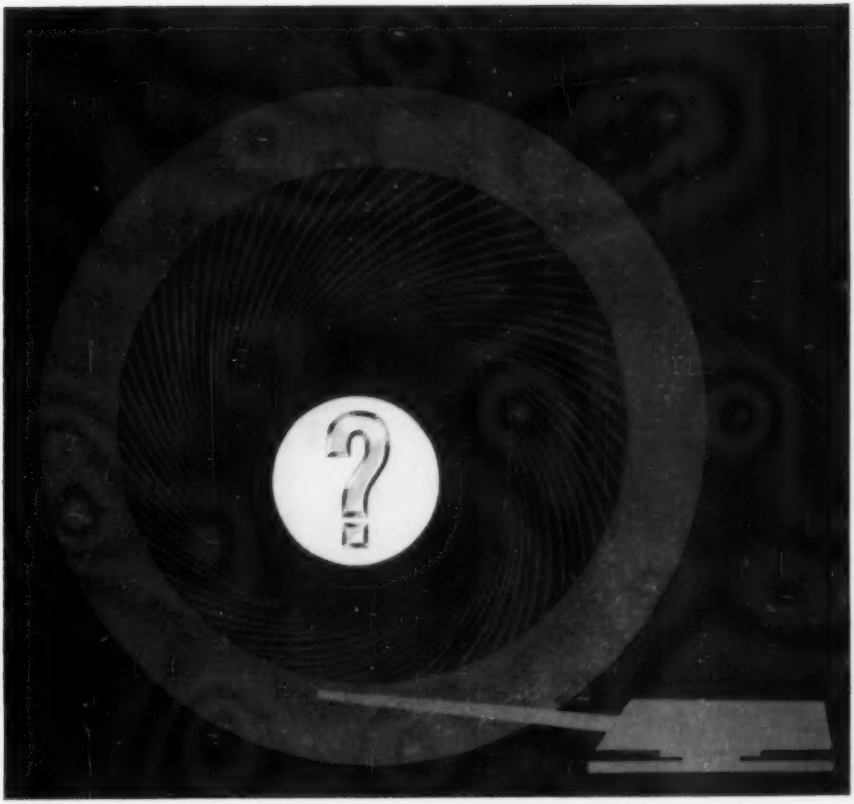
concentration should be reduced to half the stated value when treating unalloyed magnesium.

COPPER PLATING. A copper deposit from a cyanide solution is deposited immediately after the application of the zinc coating. About 0.0001 inch copper is sufficient when subsequent plating is to be from an alkaline solution, while at least 0.0003 inch copper is required before plating in an acid type bath. The following solution is recommended for the copper strike over the zinc coating.

Copper cyanide	41.3 g/l
Sodium cyanide	50.8 g/l
Sodium carbonate	30.0 g/l
Rochelle salt	45.0 g/l
Sodium hydroxide	7.5 g/l
Free cyanide	5.6 g/l
Operating temperature	150 to 160 deg. F.
pH (colorimetric)	12.2 to 12.8
Cathodic agitation	8 to 12 ft./min.

Electrical contact is made quickly and the plating is performed at a current density of 15 to 25 amp./sq. ft. With deeply recessed parts, it is said to be desirable to strike at 30 to 40 amp./sq. ft. for the first 30 seconds to one minute. Where periodic reverse current is used a cycle of 15 seconds forward and 3 seconds reverse is recommended, but the first 30 seconds to one minute should be on forward cycle.

SUBSEQUENT PLATING. Standard solutions may be used for subsequent plating once the minimum thickness of copper indicated above has been applied. Plates which have been used include nickel, chro-



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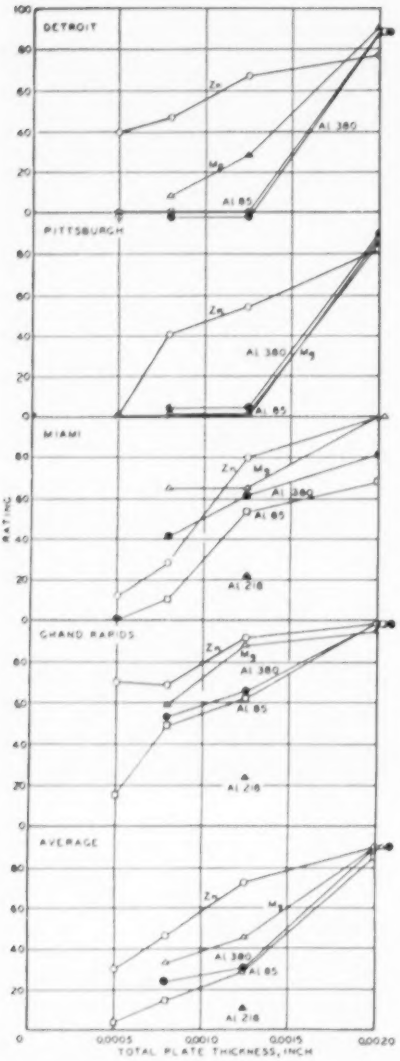

Fig. 4—Graphs show the comparative results of exposure tests of Cu-Ni-Cr plates of varying thickness on aluminum, magnesium, and zinc panels. Exposure time was one year at each test site. Protection is comparable to that afforded over other non-ferrous metals.

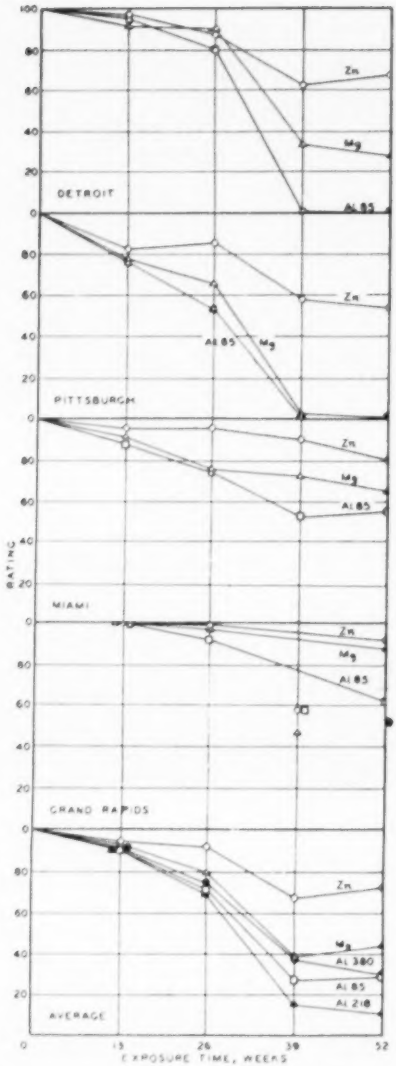

Fig. 5—Graphs showing effect of exposure time in various geographical locations on corrosion test results for Cu-Ni-Cr plates. Plating thickness on each of the panels was 0.00125 inch. (Photographs and diagrams courtesy Dow Chemical Company, Midland, Michigan.)

to page 66→

WAGNER BROTHERS'

BULLETIN 655

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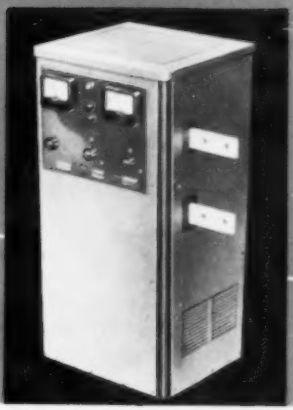
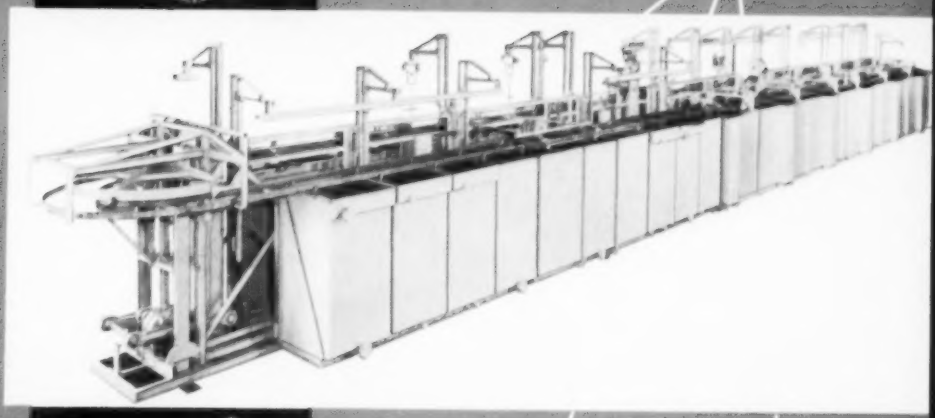
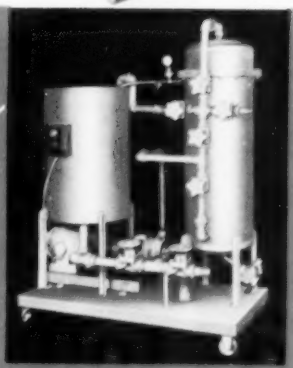
automatic plating equipment and supplies







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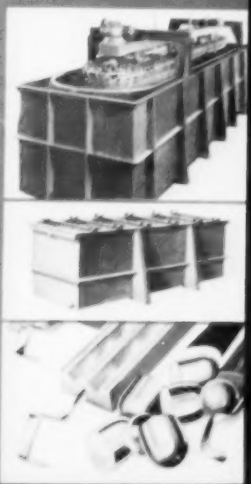

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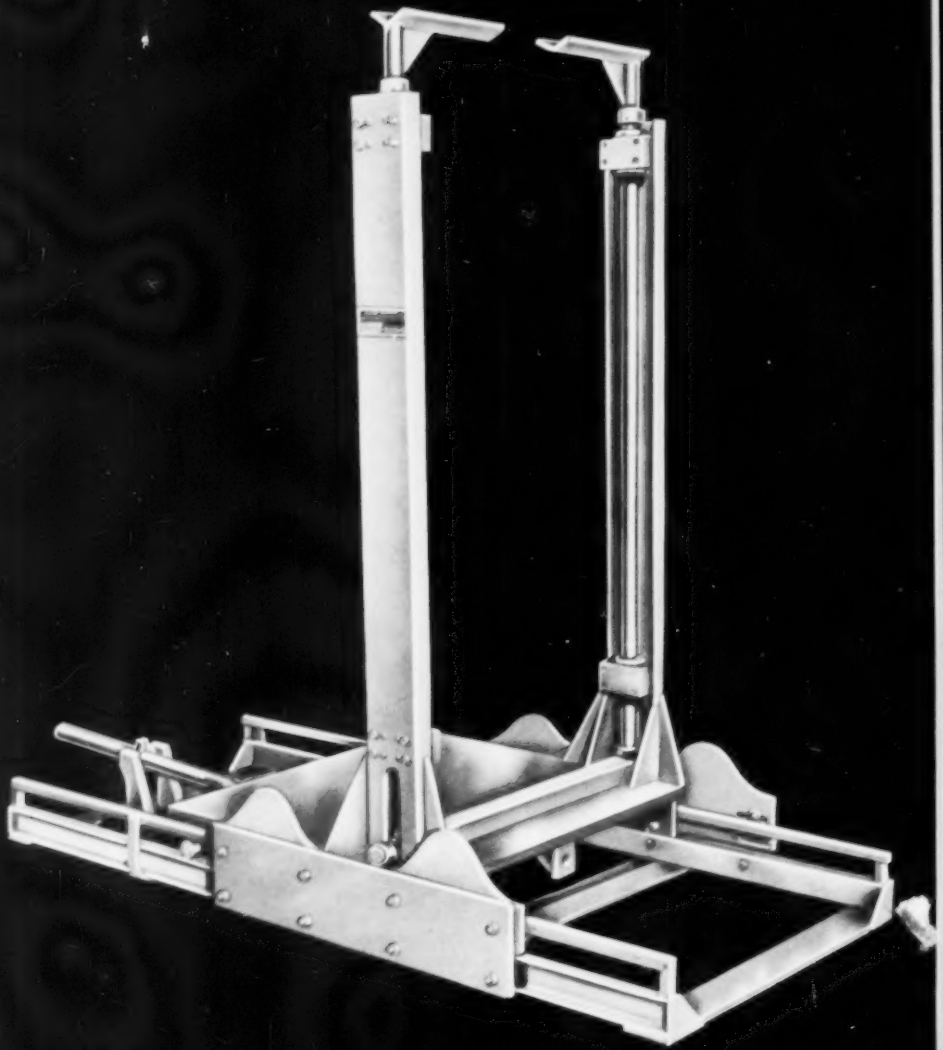

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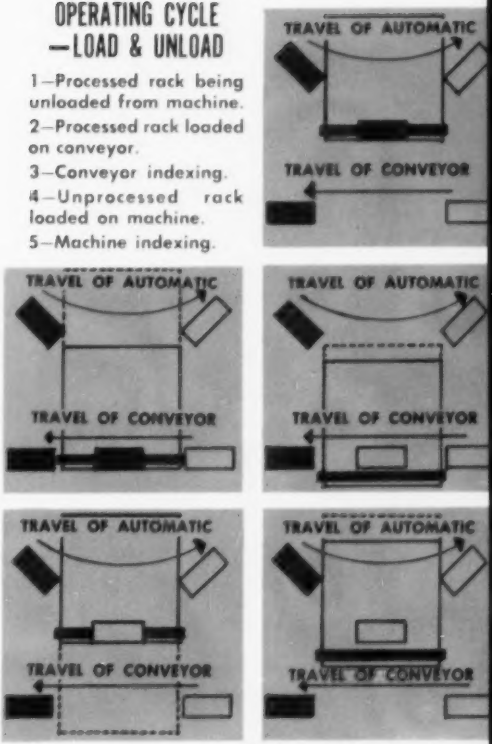

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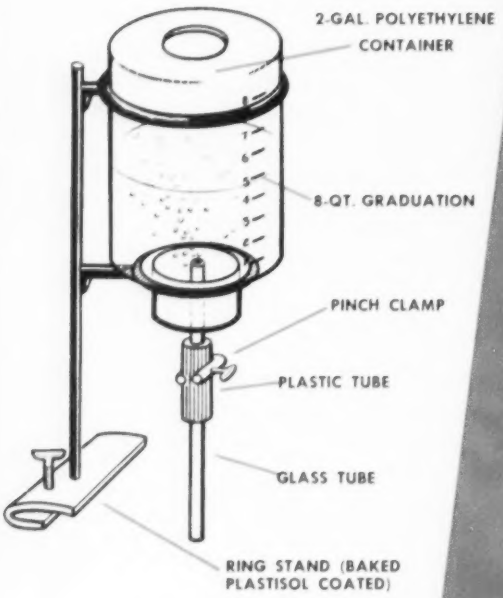

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Since Krome-On is soluble, it will not cake-up your tanks. It does not alter the sulfate radical of the chrome bath, thus will not change the chosen ratio.

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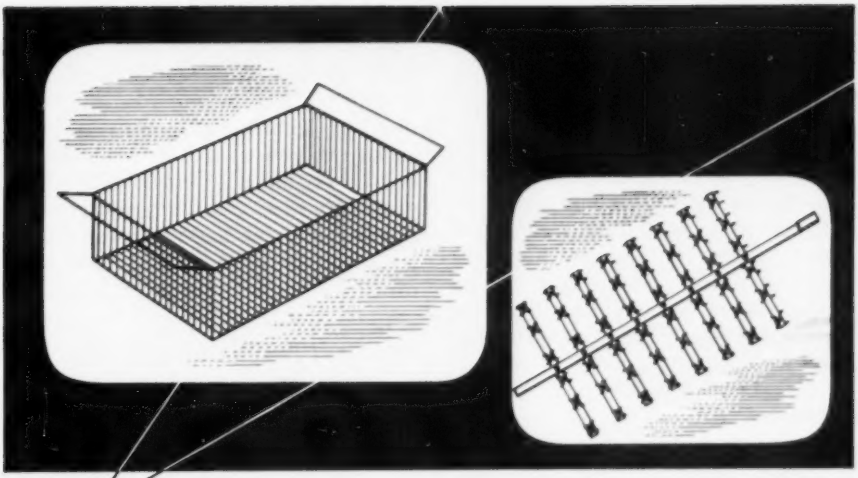

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mium, brass, zinc, cadmium, silver, and gold. Brass and zinc have been electrodeposited from cyanide baths directly on the immersion zinc coating, but when this is done electrical contact must be made as the work enters the bath. For plating tubing and deeply recessed parts with nickel the following special solution has been developed:

Nickel sulfate	60 g/l
Boric acid	35 g/l
Ammonium fluoride or bifluoride)	65 (or 50) g/l
Wetting agent	0.05 g/l
Hydrofluoric acid	to pH 5.5
Temperature	115 to 125 deg. F.
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Small parts may be barrel plated in which case the zinc coating is applied in a very slowly rotating barrel. For rack plating, conventional racks may be used but they should be well coated with organic coatings with only the barest minimum of exposed metal for making contacts. If the racks are used for plating metals other than zinc, cadmium, brass, or copper, the racks should be copper flashed after each cycle.

Properties of the Coatings. The author states that the adhesion of the coatings is equivalent to that usually obtained with good practice on zinc-base die castings. Tests have shown that wrought magnesium parts, when plated with copper, nickel, and chromium, can be heated to the melting point of magnesium without general lifting of the coating, and cast parts may be heated to 450 deg. F. without blistering.

Figures 4 and 5 show the results of some recently completed corrosion tests of magnesium panels plated with copper-nickel-chromium together with similar tests using aluminum and zinc as base metals. The author concludes from these and other tests that "electroplating on magnesium is a practical means of securing a good degree of corrosion and tarnish resistance and is consistent with the protection given by plates on other non-ferrous metals such as aluminum and zinc." He also implies that with further improvement in the processes for producing die casts of magnesium and aluminum alloys, the corrosion protection offered by plates on these metals can be expected to improve also.

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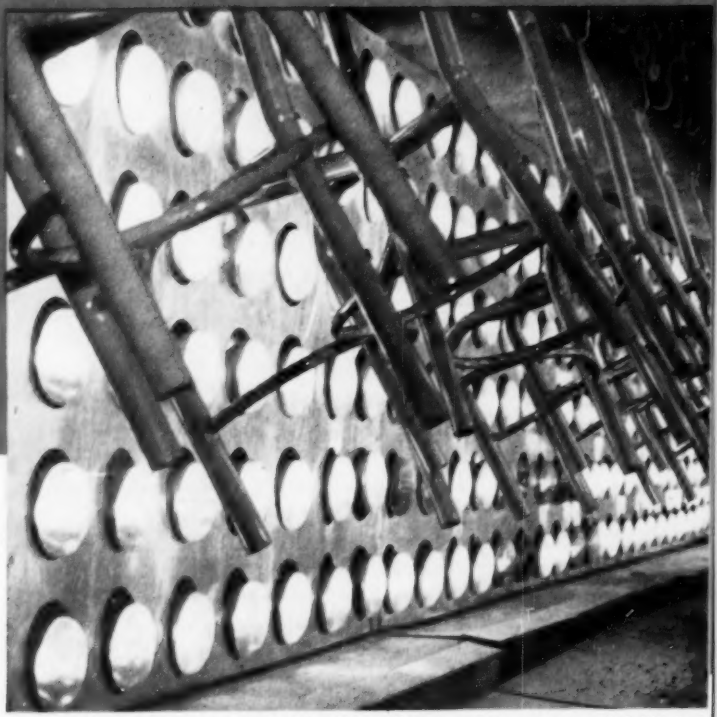

60-foot infra-red tunnel in plant of the Griggs Equipment Company in which Pittsburgh finishes on seat frames are baked for ten minutes at 300 degrees Fahrenheit

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THE MOST IMPORTANT TIME SAVER TO BE DEVELOPED IN FIFTY YEARS of construction business is the use of curtain wall construction, according to authorities in the building field. Developed since World War II, curtain wall construction utilizes large panels of aluminum or stainless steel, one or two stories high, which are fitted to the structure of the building, with window openings prefabricated into the panels.

Fig. 1—The Davies Building, in New York City, before and after curtain wall construction. General Bronze Corp. supplied prefabricated aluminum panels and supervised the erection of this building, which was completely aluminum-walled in a record ten hours.

An important trend in modern architecture and building construction is the increasing use of "curtain wall construction" for metal exteriors of skyscrapers, modern office buildings and factories. Modern metal finishing processes protect such building surfaces against corrosion and other weather conditions and maintain their gleaming appearance.

Using curtain wall aluminum panels, an entire 15 or 20 story building has been enclosed in a day or so. Striking architectural effects can be obtained by using colored or stamped metal panels of different shapes and sizes. These advantages have boomed curtain wall construction business 500 per cent in the past five years.

The first metal finishing company in the country to prepare metal panels for curtain walls is the General Bronze Corp. of Garden City, N. Y. Since 1910 the company has fabricated and finished windows, doors, store fronts, interior metalwork and hand railings of aluminum, stainless steel and bronze. GB supplied aluminum for the first aluminum walled structure in this country—the Alcoa Building in Davenport, Iowa; and the biggest aluminum building in America—Alcoa's Pittsburgh installation.

Recently GB made construction history by enclosing the new Marion Davies Building in New York (Fig. 1) with aluminum panels in 10 hours—a job that would have taken 8-10 weeks using masonry construction. GB has also supplied metal for such important structures as the UN Building, the Lever House and the Manufacturers' Trust Co. building in New York.

Finishing Process for Building Panels

Improved metal finishing processes play a key role in protecting the metal surfaces of these buildings against corrosion and maintaining their bright surfaces. GB uses the anodizing process called Alumiliting, which forms a protective oxide coating on the metal.

Recently GB upgraded its Alumiliting process and increased production some 300 per cent by installing a new, streamlined Alumiliting system. The new setup was designed, manufactured and installed by Hanson-Van Winkle-Munning Co., Matawan, N. J., a leading manufacturer of metal plating and finishing equipment. The new facilities make possible efficient anodizing of two-story aluminum panels, 30 ft. high.

Quality control standards have grown more exacting as curtain wall construction increased in use. Different types of aluminum, different coating thicknesses measured in fractions of mils, and a wide variety of metal configurations have made a closely con-

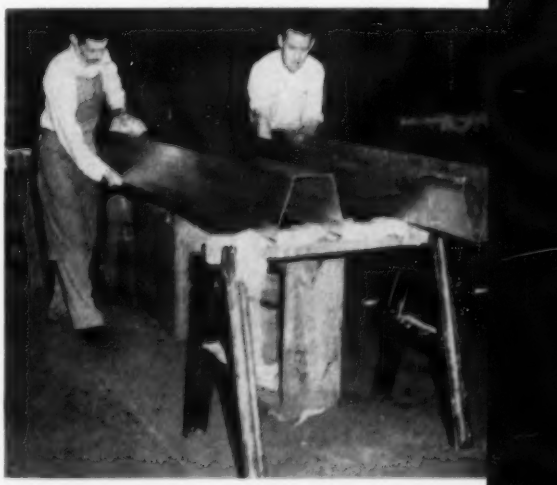

Fig. 2—Aluminum parts are rubbed down with a solvent to remove all dirt before starting through the Alumiliting sequence.

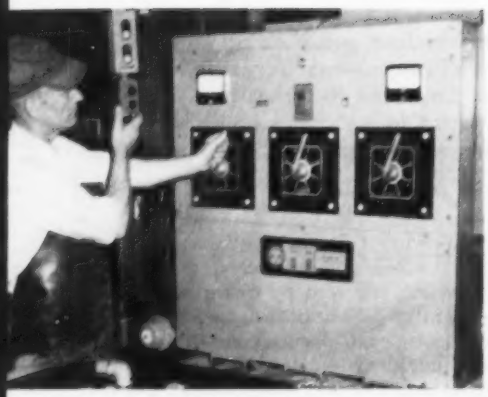

Fig. 3—Master Control Panel and conveyor controls for H-VW-M Alumiliting system. Three dials permit the plater to introduce a gradually increased current flow into the acid bath. Plater holds conveyor control in right hand.

trolled but highly flexible Alumiliting operation essential.

In the new tanks GB processes two 30 by 4-foot panels (240 sq. ft.) in one hour. Improved conveying and tank setup permits 16 anodizing cycles each two-shift day, for a total of about 4,000 sq. ft. per day.

With the old and the new system in full operation, GB now processes a total of 6,700 sq. ft. of aluminum parts a day—an increase of about 250 per cent. This is equivalent to about six tons of finished metal a day.

Improved tank layout and a new overhead conveying system have given GB several more anodizing cycles per day. Tanks are arranged in sequence in a straight line, so that parts can be transferred to the next step in the process in a matter of seconds. A two-rail semi-automatic crane conveyor lifts and lowers parts through the process.

Manhours and processing time for two-story, 30-foot panels have been cut in half by the new system. GB now Alumilites such parts in a single immersion in the new 32-foot tanks.

Quality standards are much more precisely controlled by precision instruments in the H-VW-M system. Temperature controls, current controls, automatic timing devices and test instruments including filmometer, pH meter and reflection meter, maintain exact controls at key points. Temperature of the Alumilite bath is carefully maintained by heat exchangers and a refrigeration unit. A separate deionizing unit supplies chemically pure water to the Alumiliting and sealing tanks.

Anodizing Process

GB's new anodizing equipment is operated by five men: one anodizer, who is responsible for moving material through the processing tanks with an overhead crane, and maintaining proper controls over temperatures, solutions and anodizing current; and four helpers who prepare aluminum parts for processing and load and unload them from the racks that carry them through the tanks.

Aluminum parts that are to be anodized are wheeled into the plating area on a flat truck and stored near the tanks. Before they start through the Alumiliting process, they are cleaned by two of the helpers (Fig. 2), who rub them down with a solvent.

Parts are then racked on an aluminum carrier. S-shaped metal pieces are bolted to the parts, then the upper section of the S-bar is fitted over the rack. The aluminum rack holds six sets of 28-foot parts or four sets of 10-foot parts (due to the more complex configuration of the shorter parts).

The loaded rack is then attached to the overhead crane, and is moved to the caustic tank, the first step in the Alumilite sequence.

Parts are immersed in a solution of 6 oz./gal. caustic soda, held at 140 deg. F. for a cleaning period of 2 to 10 minutes, depending on the shape and material of the part.

As parts are lowered into this tank, the plater sets an electric timer located

at one end of the tank. At the end of the dwell period, a bell sounds and the plater transfers the parts to the next tank in the cycle.

Dwell period in the rinse tank is a matter of seconds unless succeeding tanks are loaded with other parts. Eight gallons of water per minute flow into the tank from water used to cool the refrigeration unit. Water passes out through overflow weirs, to ensure a constantly clean rinse.

Aluminum parts are immersed in the Alumilite (anodizing) tank from 15 minutes to 1 hour, depending on the coating thickness specified. One hour of immersion provides a thickness of 0.9 mils.

The Alumilite is a 15 per cent sulfuric acid solution, maintained at 70 deg. F. by a refrigeration unit and two heat exchangers. Bath is agitated by air from perforated pipes in the bottom of the tank, ensuring a uniform finish on the Alumilited parts. An electrical timer, similar to the one on the caustic tank, is set at the time of immersion specified for the prescribed dwell period.

Current is supplied by four selenium rectifiers, each rated at 1,000 amperes. Average current requirement is 12 amp. per hr. per sq. ft. of surface.

Rectifier control is maintained from a master panel (Fig. 3) located at the anodizing tank. The panel contains a triple dial system, rated from one to eight, which gradually increases the current flowing into the tank.

Parts are immersed in a cold water rinse tank for a short period to remove excess acid from the anodized surface. Inner surface of the tank is painted with Tygon to protect it from acid car-

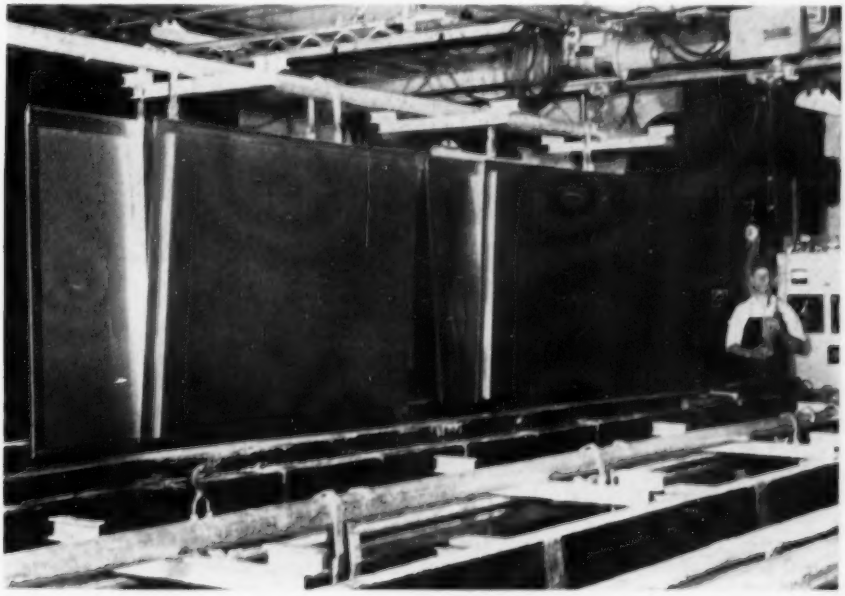

Fig. 4—Overhead conveyor with 2 hoists carries parts through the Alumiliting sequence. Transfer time between tanks is only seconds. Parts shown are entering hot water seal.

ryover from the Alumilite tank. As parts are removed from this tank, the plater washes them down with a hand brush to ensure complete removal of residual acid.

Parts are next immersed in the hot water seal tank (Fig. 4) for a dwell period of 10 to 15 minutes. Water temperature is maintained at 212 deg. F. by four stainless steel heating coils, and controlled by a temperature regulator. Deionized water flows into the tank at a rate of 3 to 4 gal./min. with a top flow rate of 8 gal./min.

Following the hot water seal, the parts are moved back to the loading area and unracked (Fig. 5). After anodizing, the panels are moved to fabrication areas and, if specified, stamping machines. Prior to shipment they are sprayed with a clear lacquer, which protects them during shipment and installation.

Installation and Equipment

The five tanks in the new Alumilite ing system are installed on a specially constructed platform, 30 by 45 feet, with the floor around the tanks acid-proofed. All tanks are 32 feet long, 4½ feet deep and 2½ feet wide, except for the two cold water rinse tanks, which are two feet wide. Rinse tanks are made of welded ¼-inch steel plate, except for the hot water sealer, which is 3/16-inch stainless steel.

The Alumilite tank is lined with 8-pound lead containing 6 per cent antimony. All piping into this tank is made of plastic.

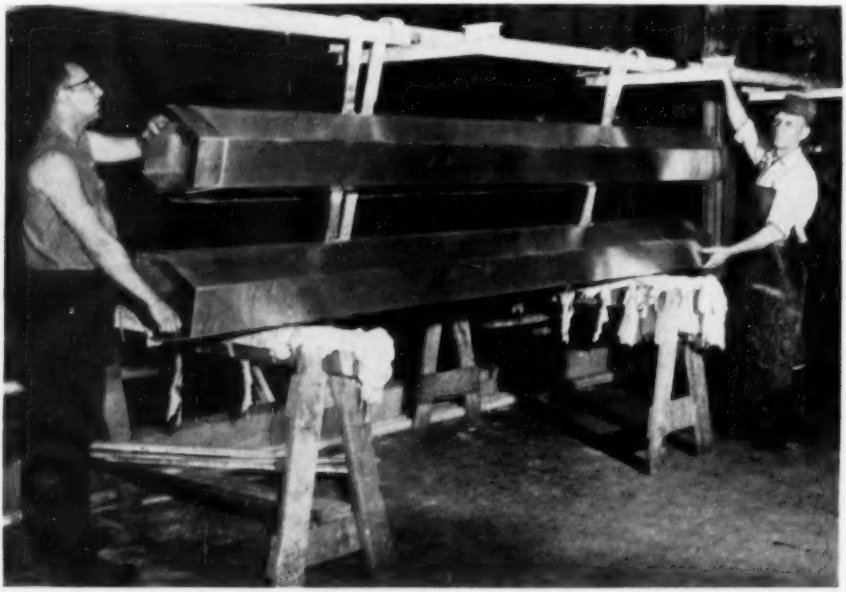

Fig. 5—Alumilited parts are unracked following completion of the finishing process. They will then move to the fabrication, stamping and lacquering operations prior to shipment. (Photographs courtesy Hanson-Van Winkle-Munning Company, Matawan, New Jersey)

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Practical Applications

Karbate heat exchangers are used for the acid, each with six 9-foot tubes. When both exchangers are in operation, the contents of the tank can be changed 12 times an hour, assuring good solution agitation.

The cation-anion deionizing unit has a capacity of 22,000 gallons of water per regeneration. It produces effluent during continuous operation that contains no more than 10 parts per million of dissolved solids, exclusive of silica and carbon dioxide.

Two large exhaust fans are located on each side of the system and draw fumes off the caustic, acid and hot water seal tanks. Hoods on each side collect at several points and are deadended at the center of the tank, providing better distribution in drawing off the air to the fans. Combined capacity of the two fans is about 34,000 c.f.m.

For more data circle 1 on Reader Service Card

★ ★ ★

Evaporators Used in Plating Solution Recovery

RECOVERY OF ZINC PLATING SOLUTION BY EVAPORATION of rinse water has solved a stream pollution problem in the disposal of cyanides in waste material.

The method is being used by Channel Master Corporation, maker of television antennas, Ellenville, N. Y. Some of the company's products and job lots of metal products of other manufacturers are being electroplated with zinc.

The recovery equipment features operating temperatures low enough to prevent conversion of the cyanides to carbonates. A maximum temperature of 180 deg. F. is maintained by vacuum in the first effect and a still lower temperature and higher vacuum in the second effect. Use of double-effect evaporation reduces steam requirements to only half of that required by single effect evaporation.

Waste plating solution is collected in a 300 gallon tank from the overflow of the first of four rinse tanks following the plating bath. Rinse water normally cascades from rinse tank to rinse tank countercurrent to the movement of plated products. Flow rate ranges from ½ to 1½ g.p.m. Concentration of sodium cyanide, zinc cyanide, and sodium hydroxide in the first rinse tank may be as high as 1.25 to 1.50 oz./gal., but is usually less than half this much. In the recovery of plating solution enough water is evaporated to increase the concentration of cyanides up to 12 to 15 oz./gallon in the evaporator. The recovered solution is then pumped into a 300 gallon holding tank. If the rinse water contains any chromate from accidental contamination, it is neutralized by adding sodium hydrosulfide in the holding tank.

When operating the evaporator, the contaminated rinse water is pumped from the holding tank through a preheater or heat exchanger into the first effect evaporator tubes. It flows upward through the tubes at high velocity, absorbing heat from the surrounding steam chest. Low pressure steam in the steam chest raises the temperature of the pre-heated solution to a boiling point of about 180 deg. F., as determined by the vacuum maintained in the first effect separator. The condensing steam then passes through the preheater to give some of its remaining heat to the incoming waste rinse solution, and is discharged through a conventional steam trap to waste.

The portion of the waste rinse water that is evaporated and separated in the first effect is used as the heating med-

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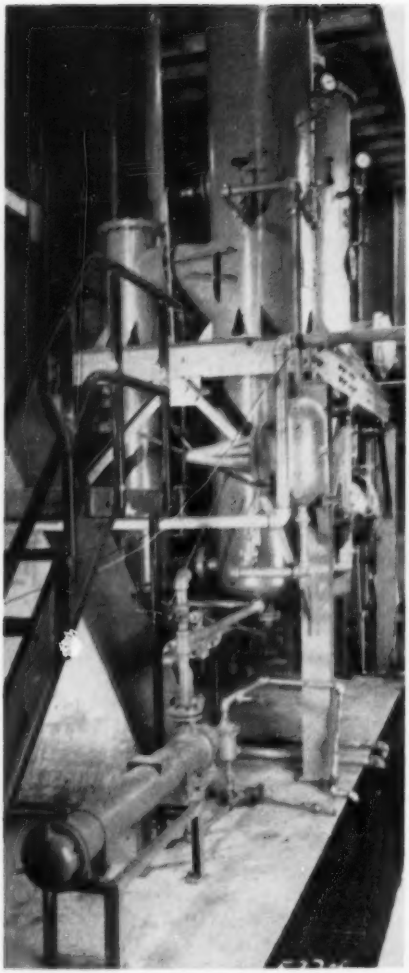

Double-effect Buflovak evaporator for recovery of zinc plating solution from waste rinse water solved a waste disposal problem for Channel Master Corporation, Ellenville, N. Y. First effect evaporator and separator are in foreground. Liquid level flow controller is at lower right. Operation is almost fully automatic. System processes dragout from about 11,000 gallons of zinc plating solution. (Photo courtesy the Blaw-Knox Co., Pittsburgh, Pa.)

ium in the steam chest of the second effect evaporator where a higher vacuum reduces the boiling point to 115 deg. F. To keep entrainment to a minimum of 5 p.p.m., the vapor head of each evaporator is equipped with a York mesh demister. The portion of the rinse water that collects as condensate in the bottom of the first effect separator is passed to the second effect evaporator.

Three products are removed after second effect evaporation. Two of them are distilled water — condensate from the second effect steam chest and the condensed vapor from the separator. The latter passes into a surface condenser where its temperature is reduced by cooling water and then into a condensate receiver under vacuum. The distilled water from steam chest and condensate receiver are pumped independently into a 300-gallon holding tank to be re-used in plating rinse water tanks.

The third product, condensate in the bottom of the second effect separator, is plating solution of approximately the same composition as the original. It is pumped into another 300-gallon holding tank.

Distilled water in the receiver is pumped out automatically whenever it reaches a pre-set level. If more rinse water is required than is obtained by evaporation of the contaminated rinse water, it is obtained from the steam that condenses in the pre-heater and in the heating coils of the first effect.

Operation of the evaporators is simple and automatic. Circulation is maintained by thermal difference. Steam input to the evaporator is automatically regulated by a float-type control operating on the solution level in the holding tank. Solution level in the separators automatically regulates the flow of waste rinse water into the evaporators and the operating temperature is automatically maintained at any desired level.

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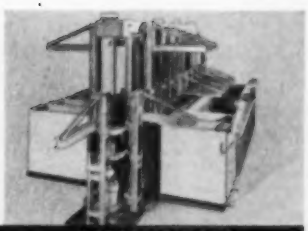
Low initial and low operating costs are features of this newly introduced small automatic which has a big capacity for its size.



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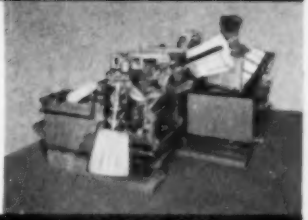

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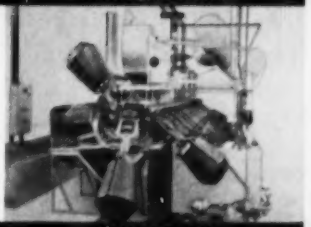

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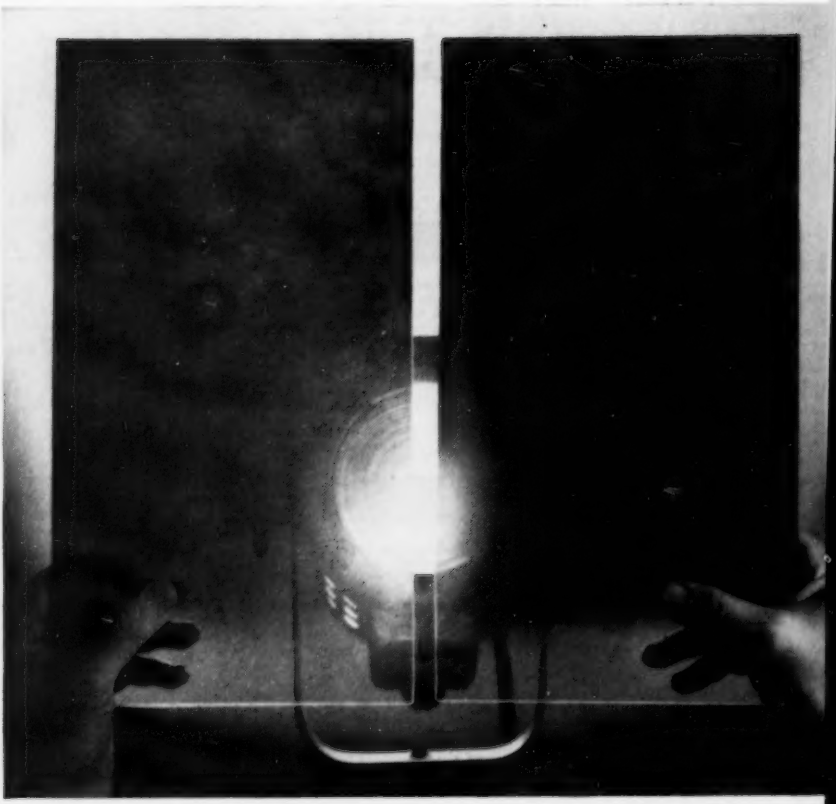

***Paint applied** to its maximum film thickness by the usual spray method (cold) looks like this in front of a powerful spotlight. Note coverage.*

***Same paint** applied by the DeVilbiss Hot-Spray method produces far greater coverage with a heavier coat, as the glass panel on right shows.*

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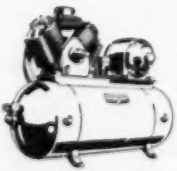

Hose and Hose Connections

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Demonstration on glass proves DeVilbiss Hot Spray cuts finishing costs

Now, using a DeVilbiss Paint Heater, *one* coat sprayed *hot* generally covers better than *two or more* cold-sprayed coats! More paint reaches a surface *and stays there* . . . because thinning paint with heat – rather than with solvent – permits application of higher solid-content material for heavier coats and greatly reduced overspray.

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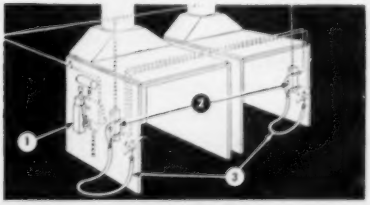

DeVilbiss Hot-Spray system is foolproof; adapts to multiple gun hook-ups. Hot water from master heater (1) heats paint in exchangers (2); heat-jacketed hose assemblies (3) keep paint hot right up to guns, assuring uniform viscosity at all times at each gun.

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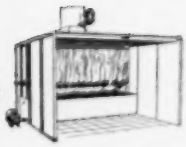

Spray Booths

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DEVILBISS

DEVILBISS HOT SPRAY

For more data circle 170 on Reader Service Card

Operating experience to date indicates a steam consumption of 90 pounds of 15-p.s.i. steam per pound of sodium cyanide recovered. An ejector unit used with the evaporator requires an additional 50 pounds at 90-100 p.s.i. About 500 gallons of cooling water at 60 deg. F. are required for each pound of sodium cyanide recovered.

The recovery system is processing the dragout from about 11,000 gallons of zinc plating solution in the plating tanks and has a maximum capacity of 160 pounds of sodium cyanide per day.

For more data circle **2** on Reader Service Card

★ ★ ★

Washing Machine Removes Buffing Compound

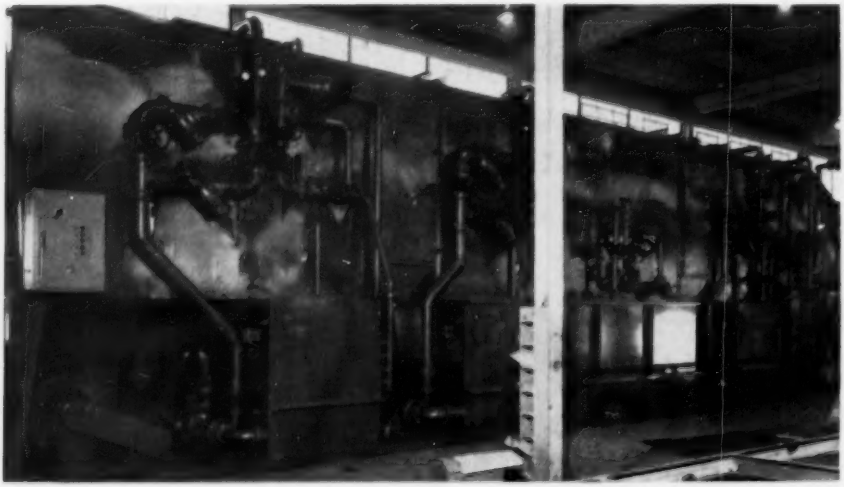
A HEAVY DUTY parts washing machine has been designed to remove heavy buffing compound from parts after processing by Schmieg Industries, Inc., New York, N. Y. The unit handles the work on a monorail conveyor traveling at 8 feet per minute through a petroleum solvent dip soak and power rinse spray; hot clear water rinse; hot caustic cleaner; and hot clear rinse, followed by hot air blow-off so as to prepare parts for subsequent operations. This washer was fully assembled and adjusted in the manufacturer's shop, and shipped in convenient, self-contained sections prepared for field erection and ready for connection of the utilities.

For more data circle **3** on Reader Service Card

★ ★ ★

Strippable Coating Protects Automobile Trim

HIGHLY POLISHED CHROMIUM and stainless steel auto parts are now protected in shipment by a strippable spray coating based on Bakelite vinyl resins. Developed by a leading auto producer to handle decorative interior and exterior metal moldings formerly shipped in paper tubing, a mechanized



Schmieg washing machine designed to remove buffing compound for the automotive industry.

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Orbital Action Sanding

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Fig. 1—Automobile trim parts are placed on cables that form conveyor which carries them through spraying and baking of a strippable coating based on durable vinyl resins.

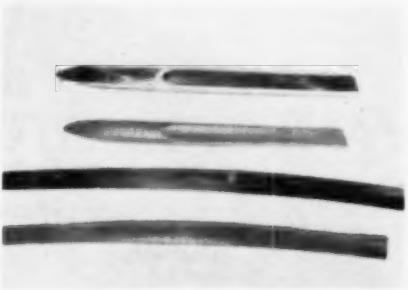


Fig. 4—Examples of metal trim parts that have been sprayed with film of strippable coating. (Photo courtesy Bakelite Co., Div. Union Carbide & Carbon Corp., New York.)

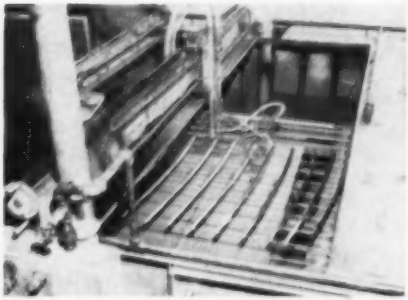


Fig. 2—Carefully angled spray nozzles cover each part with a protective plastic film.

Fig. 3—Parts move through infra-red oven operated at 325 deg. F., where the clear temporary protective coating is baked on.

system enables two men to spray coat up to 1,500 pieces per hour for service parts handling. The system is based on the ability to spray with a durable coating about one hundredth of an inch thick, while the parts move on the cables that form the feed conveyor. Carefully angled spray nozzles cover each part with a protective film based on Bakelite vinyl resins.

Resistant to moisture and abrasion, Bakelite vinyl resins, compounded by Dennis Chemical Company, form sturdy plastisol films that offer a cushion against scarring and marring polished parts in transit and yet are easily stripped off at the destination. Shallow trays under the spray recover excess plastisol for reuse. Varying the angle at which parts are placed on the endless moving cables accommodates parts up to 80 inches in length on compact equipment that measures 8 feet wide and 35 feet long. Banks of infra-red lamps cure the sprayed on plastisol to an elastic film in an oven operated at 325 deg. F.

Plastisol coatings based on Bakelite vinyl resins can also be dipped or flow-coated on metal parts and may be applied either hot or cold.

For more data circle **4** on Reader Service Card

NEW . . . from Wyandotte

Expray-AP

An all-purpose, rust-inhibiting metal cleaner for spray washers

Here's a new alkaline spray cleaner that fills a definite need in metal cleaning. Not just an improved version of cleaners already on the market, Wyandotte's EXPRAY-AP is unique . . . research-developed, proved in use. Here are some typical spray-cleaning applications:

Steel parts — EXPRAY-AP is excellent for removing fabricating soils and preventing rust — even cold in a one-stage washer.

Zinc die castings — EXPRAY-AP is nonetching and provides protection against staining.

Cast-iron parts — EXPRAY-AP removes chips and dust, prevents rust on machined surfaces.

Glass — EXPRAY-AP eliminates streaking, removes pitch, rouge, and oils from lenses and other glass products.

If you're looking for ways to improve your metal-cleaning or finishing operations, call in your Wyandotte representative. Let him show you what EXPRAY-AP can do in *your* plant. Or clip and mail coupon today! *Wyandotte Chemicals Corporation, Wyandotte, Mich. Also Los Nietos, California. Offices in principal cities.*

EXPRAY-AP gives you all these benefits — *and more!*

Powerful cleaning action — contains free-rinsing synthetic detergents!

Easy to use — noncaustic, nondusty, free-flowing!

Low-foaming — even at high concentrations and in high-pressure washers!

Prevents scale — even in hardest water!

Prevents rust — contains its own rust inhibitor!

Economical — lower use-cost and reduced equipment maintenance!

Wyandotte CHEMICALS

J. B. FORD DIVISION

WYANDOTTE CHEMICALS CORP.
Wyandotte, Michigan

Please send me further information and technical data on EXPRAY-AP.

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

For more data circle 172 on Reader Service Card

Carbide Tips Aid Finishing Procedure

SHARP CEMENTED CARBIDE TIPS provided the answer to a finishing problem at Midwest Conveyor Co., Kansas City, Mo. The wear resistance of cemented carbides has increased the life of container positioning points on a conveyorized spray painting setup. It has also helped reduce hand touch-up.

The operation here consists of moving rectangular steel containers through a spray booth where final finish is applied. As the cans travel on the conveyor, they are held in place by positioning rods.

During the operation, each container is spray finished. The points of contact with the positioning arms are left unpainted. This leaves two areas to be retouched by hand after the cans emerge from the spray booth.

Before carbides came into the picture, Midwest Conveyor faced two problems due to the uneven action of the conveyor. One was the rapid wearing of the holding points. The other stemmed from this wearing action. As the points wore, a larger area of each can remained unsprayed, since the points left larger spots to be retouched. This meant an increase in hand touch-up.

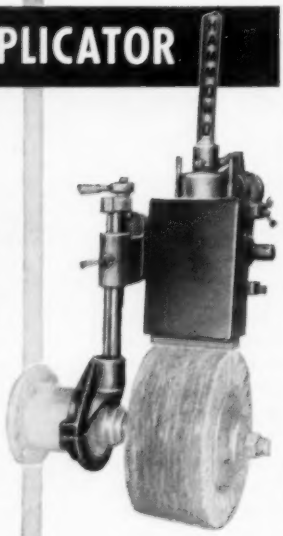
Standard cemented carbide tips designed by Carboloy Department of General Electric Company provided the answer to the problem. The tips were designed to be brazed to the steel positioning arms so that only two tiny areas remain to be retouched as containers leave the spray booth.

For more data circle 5 on Reader Service Card

Hammond
OF KALAMAZOO

APPLY BAR COMPOUND UNIFORMLY AND AUTOMATICALLY

Air Operated APPLICATOR



THE HAMMOND "AUTO DOPER"

The modern method for applying buffing compound. Soon Pays For Itself—

By **saving** 25 to 50% on compound.

By **saving** the labor cost and inconveniences of applying by hand method.

By producing a **better finish** consistently by a more uniform and regular compound application.

By **increasing production.** Compound is applied while wheel is running—production is not stopped for application.

FOR USE ON:

Polishing and Buffing Automatics, Semi-Automatics, Lathes and other polishing and buffing machines.

TWO TYPES AVAILABLE:

Cylindrical for round bars for narrow wheels. Rectangular for use with wider buffing wheels.

We can help you reduce finishing costs. Write today for literature showing our wide line of Semi-Automatic and Automatic Polishing, Buffing and Deburring Machinery.

Hammond Machinery Builders

1622 DOUGLAS AVENUE • KALAMAZOO, MICHIGAN

For more data circle 173 on Reader Service Card

A NEW, COMPREHENSIVE MANUAL OF THE LATEST TECHNIQUES FOR PRECISION BARREL FINISHING METALS AND PLASTICS

Here's a new, 40-page, practical guide . . . filled with helpful facts and processing data . . . which tells a comprehensive story of modern precision barrel finishing for both metals and plastics. It is written in step-by-step fashion by the originators and developers of many of today's most advanced techniques.

Dozens of photographs show actual operations and before-and-after parts. A fund of valuable information is included on: proper loading procedures—correct water levels—selection of compounds—proper media types and sizes—time cycles—self-tumbling—free tumbling—fixture tumbling—unloading and drying of parts.

This new Precision Barrel Finishing manual is being published as a limited edition. The price is 50 cents per copy. To obtain yours, please mail coupon below.

a limited edition . . . 50 cents per copy

LORD CHEMICAL CORPORATION

Dept. PF 2068 S. Queen St.
York, Pennsylvania

Enclosed is $ _____ (amount)
for _____ (number) copies of
the new Precision Barrel
Finishing Manual.
Send them to:

Name _____

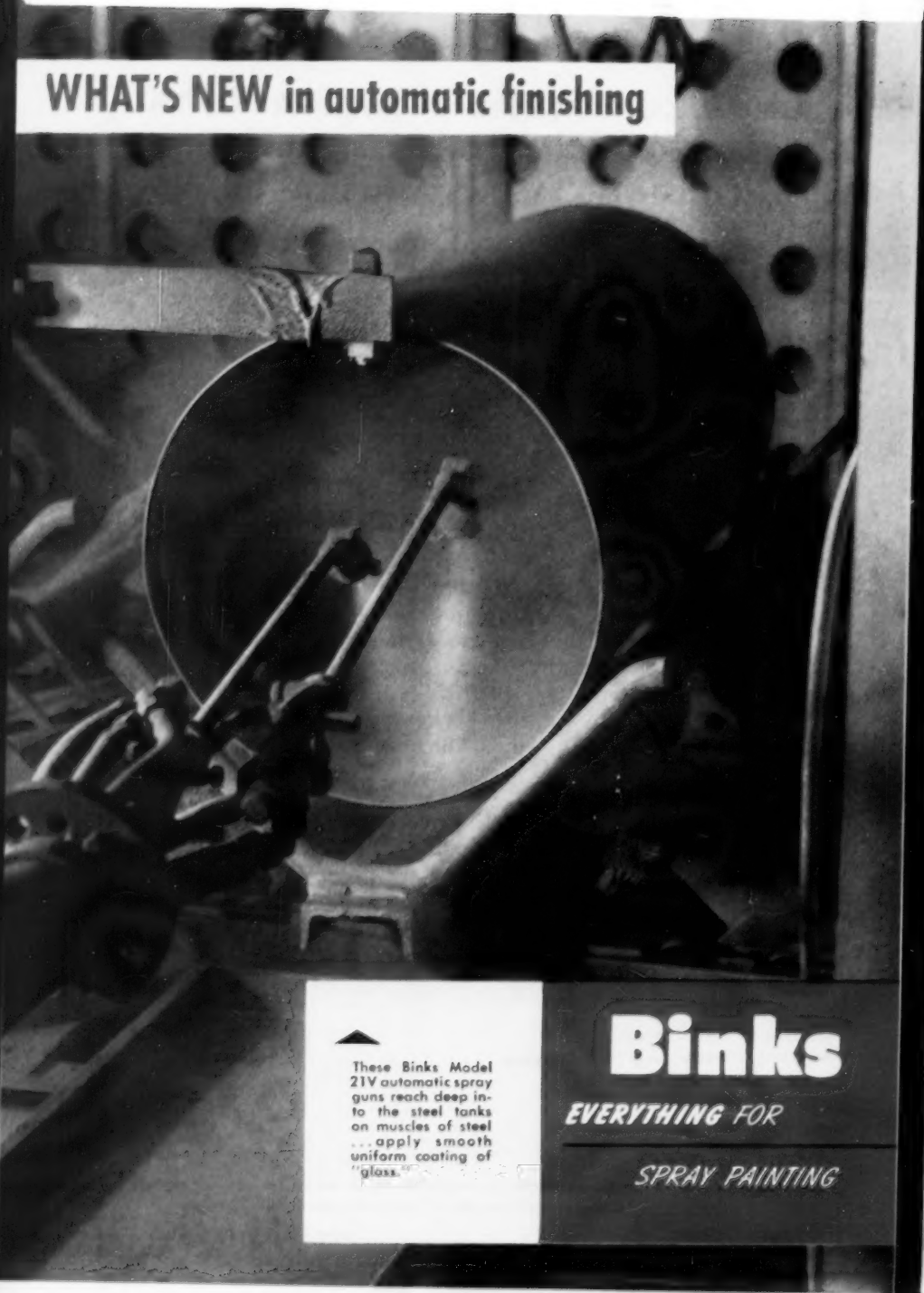
Company _____

Street _____

City _____ Zone ____ State _____

For more data circle 174 on Reader Service Card

WHAT'S NEW in automatic finishing



These Binks Model 21V automatic spray guns reach deep into the steel tanks on muscles of steel . . . apply smooth uniform coating of "glass"

Binks

EVERYTHING *FOR*

SPRAY PAINTING

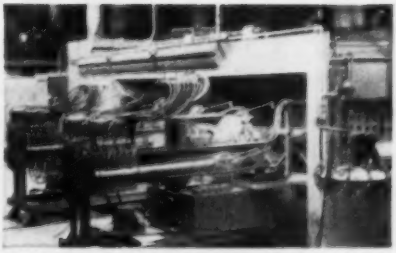
..Binks guns automatically spray glass linings in Rheem tanks

Rust and corrosion have long plagued the owners of water heaters. To lick this problem, the Rheem Manufacturing Company, world's largest maker of automatic storage water heaters, developed Rheemglas.

Rheem literally lines these new tanks with glass. It is sprayed on in the form of a slip, made from a special frit and is later fused with the metal walls of the tank at 1600° F.

To produce these superior tanks in quantity and at reasonable manufacturing costs, Rheem engineers rely heavily on the latest techniques of mass production. Equipment was developed, with the help of Binks engineers, to apply the glass linings automatically.

A long reciprocating arm pushes Binks Model 21V automatic spray guns deep into the tank. The guns turn on and off automatically and coat the inside of the tank quickly and uniformly. Flues are coated separately on Binks vertical reciprocating machines.

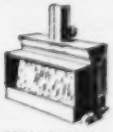


Over-all view of automatic machines.

Installations of this kind show what can be accomplished when plant engineers utilize the knowledge and experience of specialists. Binks engineers have worked closely with leading manufacturers for over 50 years. The knowledge they have gained is yours for the asking.

IAT-56

GUNS



SPRAY BOOTHS

COMPRESSORS

FLUID TANKS

FREE INSTRUCTION

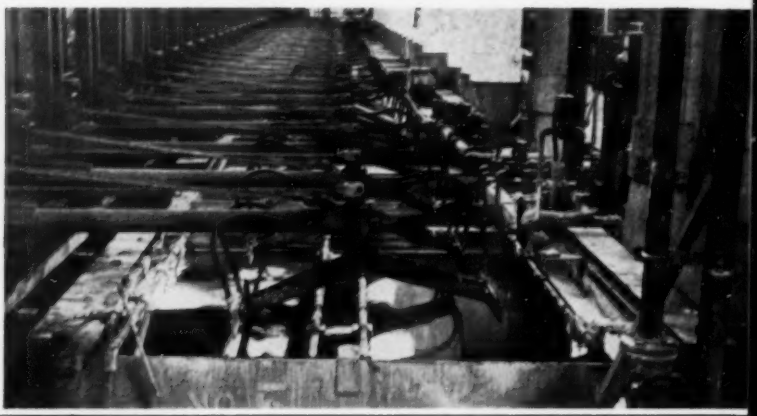
Binks Manufacturing Company 3118-40 Carroll Ave., Chicago 12, Illinois

REPRESENTATIVES IN PRINCIPAL U. S. & CANADIAN CITIES · SEE YOUR CLASSIFIED DIRECTORY

For more data circle 175 on Reader Service Card

News about UNICHROME
Trade Mark

More reports of better



Performance of SRHS Chromium Solutions has resulted in their extensive use by major plating plants.

A complete "package" of processes for chromium finishing

Unichrome Copper, Unichrome Bright Nickel and SRHS Chromium are so thoroughly suited to each other, they represent something unique in finishing. Used together, they add up to more advantages than the sum of their individual benefits.

Better Operations and Results

Unichrome Pyrophosphate Copper contains no cyanide, saves disposal costs, and reduces or eliminates much buffing expense.

Unichrome Bright Nickel cuts downtime for purification, has unusual operating stability.

When both of these processes are used along with SRHS Chromium, benefits begin to multiply. The copper proves active for the nickel. In turn, the nickel shows unusual receptivity for the chromium. Passivity problems are eliminated. Downtime drops, rejects become rare.

Moreover, service responsibility rests with one source, assuring prompt technical help and a smooth running operation.

Bulletins supply details on each of the processes. Send for them.

UNITED CHROMIUM DIVISION
METAL & THERMIT CORPORATION

100 East 42nd Street, New York 17, N. Y.
Waterbury 20, Conn. • Detroit 20, Mich.
East Chicago, Ind. • El Segundo, Calif.
In Canada:
Metal & Thermit-United Chromium of Canada, Limited, Toronto 1, Ont.

For more data circle 176 on Reader Service Card

COATINGS for METALS

Metallic . . . . . Organic . . . . . Decorative . . . . . Protective

chromium plating

Here are plants' experiences with deposits from Unichrome SRHS Solutions*

Companies using both SRHS Chromium Solutions and ordinary chromium have had an opportunity to compare results. Substantial differences have been reported.

BETTER COLOR NOTED

One plant of a well known company was using ordinary chromium over an ideal nickel surface. Another of this company's plants wasn't getting the best nickel deposit possible, but still its chromium plating had brightness superior to that of its sister plant. The second plant ascribed the difference to the SRHS Chromium being used in its tanks.

MINIMIZED REJECTS REPORTED

At one company, intricate parts were causing chromium plating difficulties. On occasion, rejects ran as high as 25%. Yet when the SRHS Chromium Solution was used, deposits covered beautifully and work was plated at a reject rate of no more than 0.4%.

UNUSUAL WEAR RESISTANCE FOUND

A large tool company chromium plated punches used in the manufacture of nuts. Various chromium solutions were tried. They reported that while ordinary chromium doubled the output from punches, deposits from SRHS Chromium tripled it.

All these reported "deposit-advantages" are in addition to the many thoroughly confirmed operating advantages of SRHS Chromium baths. These include plating with higher cathode efficiency, greater speed, a saving in power, and self regulation of important bath constituents.

Platers not using Unichrome SRHS Chromium will find it to their advantage to get the facts by writing United Chromium. *Trade Mark

New Equipment, Materials, Processes

› Cleaning
› Polishing
› Plating
› Finishing

Wide Face Polisher

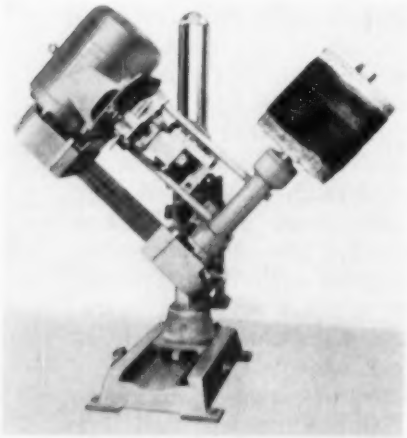
The Murray-Way Corporation, P.O. Box 180, Maple Road East, Birmingham, Michigan, has announced the development of a wide face polishing wheel.

Known as No. 53, this polisher with built-in Murray-Way Floating Action will handle widths up to 24 inches.

The "floating action" of the No. 53 gives even buffing and polishing on the entire surface. It simplifies the positioning of the work piece and, once the proper pressure is established, hundreds of pieces can be uniformly processed, it is stated.

This wide face polishing wheel is available in two models. The No. 53 heavy-duty and the No. 54, which is ¼ smaller in size.

For more data circle **6** on Reader Service Card



Murray-Way No. 53 wide face polishing wheel will handle widths up to 24 inches.

★ ★ ★

"Voltage Sensing" Rectifiers

Rapid Electric Company, 2877 Middletown Rd., New York 61, N. Y., has developed "Voltage Sensing," in conjunction with selenium and germanium rectifiers. These rectifiers automatically increase the output voltage as the load or current demand is increased. Developed for automatic plating operation, voltage sensing can be extended to other electrolytic applications where constant current density is required.

The amount of voltage increase with increasing load may be varied by a simple control which is pre-set. In automatic program plating, during a fully automatic plating cycle, and as succeeding racks are added to the solution (increasing load), the voltage requirement increases in order to maintain a required current density in all the

work. At the end of a plating period the voltage automatically decreases to prevent excessive current density or burning of the remaining pieces of work. Constant current control through Voltage Sensing offers results in elimination of human error and improvement of plating quality.

For more data circle **7** on Reader Service Card

★ ★ ★

Plastic Platers' Putty

Anderson's Plastics Company, Box 416, Natick, Mass., has announced two types of platers putty. These materials are useful in hard chrome plating, as they are resistant to chromic acid. They are also resistant to other acids, alkalis and salts.

Platers' putty formula No. 5, a dry surfaced plastic solid that can be softened by kneading with the hands, is used as a stop-off for threaded holes and other cavities. It can be used to cover or cap nuts and screws.

Platers' Putty formula "L" is a stop-off in the form of a heavy bodied oil. It has the same resistance to acids and alkalis as formula No. 5, but is easier to apply by dipping or by camels hair brush. The surface of the putty can be set or dried by a few minutes immersion in hot water or by other means of heat (200 to 250 deg. F.).

Neither formula No. 5 nor "L" will dry out or harden, even if left open. If a more permanent cap or rack coating is desired, the heat must be increased to 300 to 350 deg. F. for 15 to 20 minutes. Surplus putty can be cleaned off with naptha.

For more data circle **8** on Reader Service Card

★ ★ ★

Steam Cleaning Gun

The Oakite Hurriclean Gun has been introduced by Oakite Products, Inc., 20 Rector St., New York, N. Y.

The unusual feature of this solution-lifting steam gun is the way in which cleaning solution is used to protect the operator from heat of the steam. The Oakite Hurriclean Gun uses a tube within a tube—steam passing through the insulated interior tube, solution through the exterior. The steam loses none of its heat, but the cleaning solution reduces the external temperature of the gun.

The solution is automatically drawn into the nozzle of the gun by the partial

Steam Cleaning Gun — easier to handle

Oakite "Hurriclean" steam cleaning gun being used in maintenance cleaning application.

vacuum created by the steam passing through the gun.

Another feature of the gun is the sealed rotary joint which makes it possible to rotate the nozzle without twisting the solution or steam hose. While the forward end of the gun revolves to clean at any desired angle, the handle and hose connections remain stationary. Operator fatigue is further reduced by designing the gun so the thrust of the steam is taken up between the handles.

The gun weighs 6¾ pounds in its 3½-foot length, and slightly more in the 5-foot size. Maintenance is simple —there are no moving parts except the brass valves and the sealed rotary joint. Because solution goes through the tube at a comparatively low temperature, clogging and scaling are reduced.

To operate, the gun needs only steam and solution hose, cleaning solution made up in a 50-gallon drum or other container, and 30 pounds of steam.

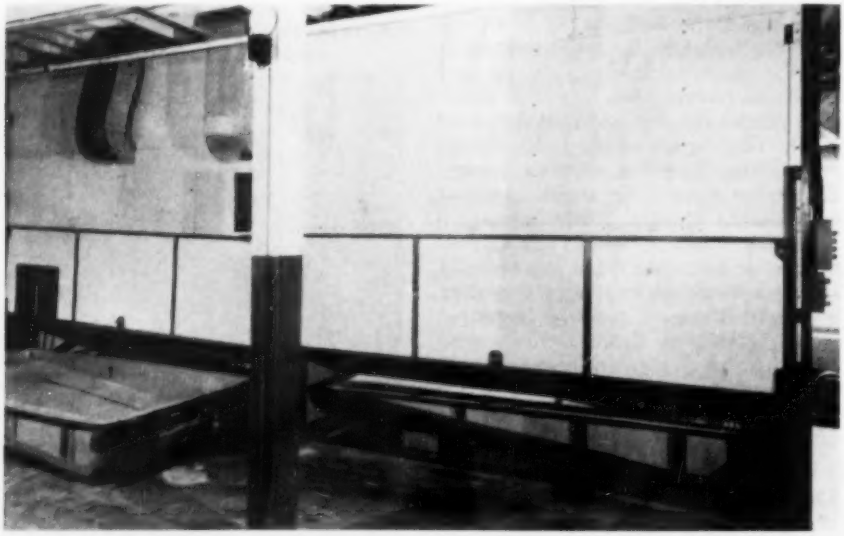
For more data circle **9** on Reader Service Card

★ ★ ★

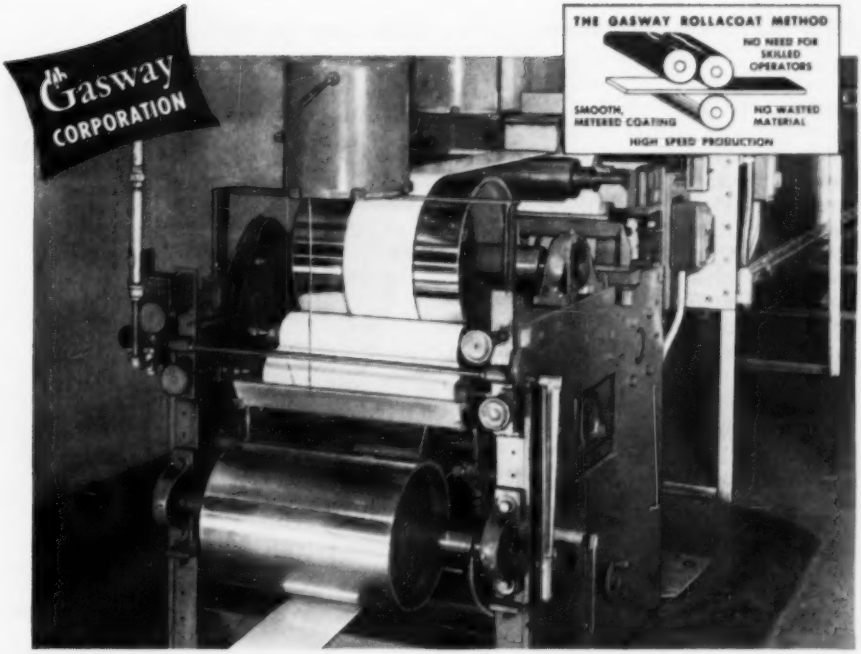
Conveyorized Dip Coating and Drying Equipment

A two-dip system for the application and drying of a primer and a finish coat to small parts has been announced by Applied Engineering Associates. This equipment produces a coating of uniform thickness that is drain-free and tear-free, and dries it in an atmosphere independent of ambient humidity and temperature, the manufacturer states. The equipment has automatically controlled extraction angles and speeds, and dries parts in a forced draft controlled atmosphere.

This dip coating technique can be



Side view of conveyorized dip coating machine. Doors are raised to show dip tanks. Baking labyrinth is above the dip tanks. Loading and unloading takes place at the right.



This manufacturer produces faster . . . saves 67% on paint . . . gets more uniform finish . . . with GASWAY ROLLACOATING

Here's how KoolVent Metal Awning Co. is controlling manufacturing costs and getting a better product, with its Gasway Continuous Strip Coating Line.

For example, KoolVent estimates that *paint consumption is approximately 33%* of what it was before the company installed its coating line. *850 square feet of aluminum is covered with one gallon of paint!* In addition to these savings, *KoolVent can and does coat an average of 8500 pounds of aluminum stock per 8 hour shift.* This is possible because the Gasway line produces 75 feet of enameled and baked strip per minute.

The manufacturing advantages don't stop with the painting either. KoolVent roll-forms its awning parts after coating. This is the last step in the manufacture of the parts. Assembly of the awning is the only thing left to do. The only handling done during manufacture is handling of coiled stock. The automation in finishing and forming operations increases efficiency, and also cuts costs significantly. *Get all the details today!*

INFORMATION AVAILABLE—Gasway will send you full details on rollacoating at no obligation. Whether you have tremendous production rates or intermittent manufacturing, there's a Gasway coater to handle the job. Send for the whole story.

Gasway
CORPORATION
6459 North Ravenswood Ave.
Chicago 16, Illinois

LOOK TO GASWAY FOR EFFICIENT, HIGH PRODUCTION COATING OF STRIP, SHEET OR PANELS

For more data circle **177** on Reader Service Card

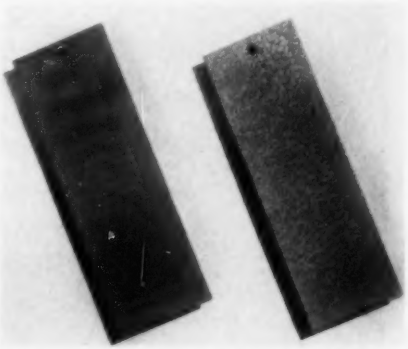
used for the application of protective or decorative coatings of lacquers, enamels, paints or varnishes, as well as various types of plastic coatings. The unit is 13 feet high and occupies 28 by 10 feet of floor space. Special chain attachments permit one operator to load and unload work carrying racks on the internal dual chain conveyor. Lift doors give ready access to the removable dip tanks for servicing. Recirculation of coating materials in the tanks provides proper dispersion of pigments. Overflow drains, part of the recirculation system, assure maintenance of constant level and removal of trapped air.

Modification of the basic design principles to meet special applications is possible.

For more data circle 10 on Reader Service Card

Silicone Hammer Finish Additive

A silicone hammer finish additive for conventional metallic paints is now available from Dow Corning Corpora-



Hammer finish (right) produced by the addition of Dow Corning silicone formula compared to same finish without silicone (left).

ARE YOUR PAINTERS UP TO HERE IN FOAM?

The answer to this problem has been developed by the leading manufacturer of spray booth coatings and water treatment products.

Eliminate excessive foam and keep your booths clean with

CRESCENT D-ZOLVZIT N. F.

(No Foam)

CRESCENT CHEMICAL CORP.

450 MARKET ST. PERTH AMBOY, N. J.

For more data circle 178 on Reader Service Card

FILTER OUT anode metal losses!

Here's a tip on how to save anode metal: *Keep your plating bath clean.* You'll have fewer rejects . . . better finish . . . longer mileage out of every anode.

Start CLEAN . . . Stay CLEAN

. . . by using Red Label Darco® S-51 regularly. It's the activated carbon especially made for taking harmful impurities out of plating baths. It wets easily, makes up into slurries readily, minimizes carbon dust in your plant.

Get Red Label Darco S-51 from your local supplier. He has it in convenient 10-lb. and 50-lb. cartons. Be sure to ask for it by name!

Write for a copy of the article "Filter Out Your Plating Rejects," by Ezra A. Blount

Chemicals Division
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE, U.S.A.
ATLAS POWDER COMPANY (CANADA), LTD., BRANTFORD, CANADA

For more data circle **179** on Reader Service Card

tion, Midland, Mich. Identified as F-4290, it is effective in concentrations as low as 0.1 to 1.0 per cent by weight.

Varying the concentration of F-4290 produces a variety of hammer effects, ranging from coarse to fine. Shelf life is excellent, with no stirring or mixing required before use.

A solution of silicone polymer in xylene, F-4290 is effective in drying type alkyds; epoxies; soya alkyd-melamine; coconut alkyd-melamine; silicones and modified silicones; and acrylic, nitrocellulose or ethyl cellulose lacquers.

Samples and further information, including suggested formulas, are available on request.

For more data circle 11 on Reader Service Card

★ ★ ★

"Quiet" Tumbling Mill

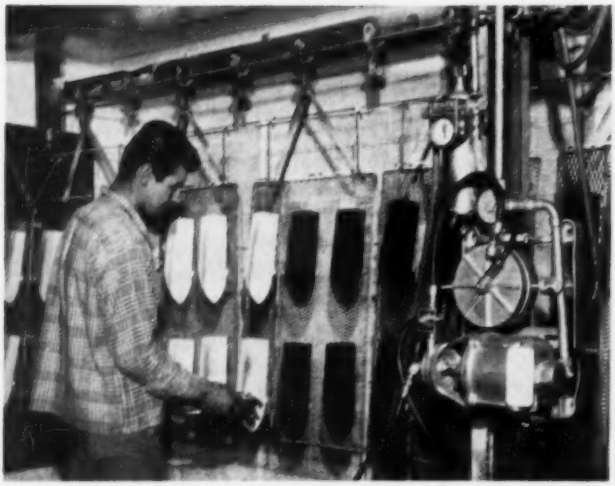
Operation of the Sly "Quiet" Tumbling Mill is approximately 90 per cent quieter, reports The W. W. Sly Manufacturing Company, 4784 Train Ave., Cleveland, Ohio.

The result of tests made during the past two years, the mill answers industry's interest in improving working conditions by eliminating noise.

The sound reduction has been accomplished in two ways. A sound-deadener of ¾-inch thick Neoprene rubber is fastened to the inside of the tumbler shell. Also, drive noise has been reduced by the use of precision-machined semi-steel gears and pinions.

Sound-deadening equipment of this type is available for installations in Sly Tumbling Mills already in use.

PRODUCTION INCREASED 500% WITH HOT SPRAY HEATER



The K & O Corporation of Van Nuys, Calif., had a severe bottleneck in the finishing department. By installing two hot spray paint heaters, a production increase from 65,000 to 320,000 toy boats was made possible the first year.

According to K & O management, the previous two-coat job was produced in a single spraying pass. Build and hold-out improved. Unit finishing time was cut by faster drying, and a cleaner, dust-free product reduced the reject ratio.

The hot spray heater is the product of Spee-Flo Corporation, Houston, Texas. The company publishes a booklet, "Why Hot Spray?" which is available free of charge upon request. Write to **Spee-Flo Corporation**, Dept. P4, 720 Polk, Houston, Texas.

For more data circle 180 on Reader Service Card

make the invisible ingredients **NORTHWEST** products **BETTER!**

Northwest Chemical formulas are based on careful research and long experience. The steady growth of the company and the acceptance of their products is due to the invisible ingredients compounded in each shipment.

The ingredients which give Northwest Chemical customers a superior product are: careful, individual attention to customers' requirements. Expert analysis of job. The technical ability and experience to produce basic formulas for top efficiency.

Remember—the cost per finished article is the true cost of your cleaner. Northwest's stand-by service keeps the job right.

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control *serving you since '32*

For more data circle **181** on Reader Service Card

Sly Tumbling Mill: more quiet

Relatively simple installation can be made by the user's own maintenance crew.

Tape recordings of the sound of the "Quiet" Mills are available through The W. W. Sly Manufacturing Co., 4784 Train Ave., Cleveland 1, Ohio.

For more data circle **12** on Reader Service Card

For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.

Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.

Write (Dep't. P) on your letterhead for catalog and price list.

DIXON & RIPPEL, INC. KINGSTON, N. Y.
ESTABLISHED 1856

For more data circle **182** on Reader Service Card

Automatic Programming Equipment

Any sequence of plating operations can be made completely automatic through the use of automatic programming equipment manufactured by Rapid Electric Co., 2877 Middletown Rd., New York 61, N. Y.

Either selenium or germanium power units can be combined with program timing equipment for automatic operation of any series of plating steps.

A number of synchronous timers housed in a single cabinet with interlocking circuits and controls will start, stop, and time any number of separate operations in any sequence.

The use of such timers, plus a motor-driven auto-transformer, controls the output in pre-set time intervals for pre-strip and finishing operations.

For more data circle **104** on Reader Service Card

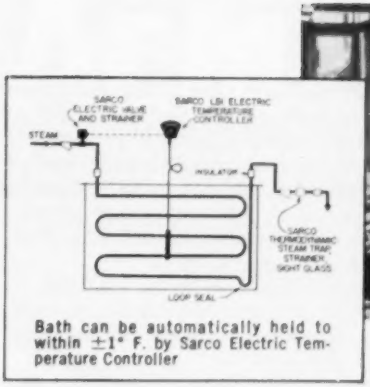
★ ★ ★

Industrial Paint Finishes

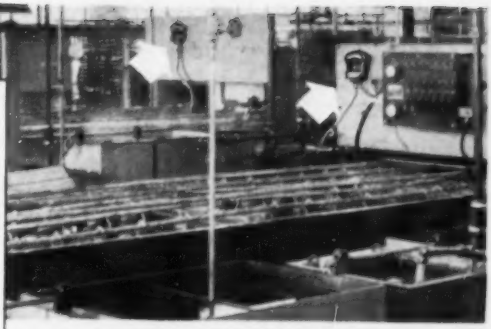
The Nubelites, a group of alkyd-amine baking enamels formulated for finishing a wide variety of metal consumer products, are custom-formulated by the manufacturer for the specific method of paint application and the end product use.

By varying the basic formula, the manufacturer, Glidden Company, 11005 Madison Ave., Cleveland 2, Ohio, is able to produce finishes suitable for application by manual, automatic or electrostatic spraying as well as by flow coating and dip painting.

The characteristics built into the Nubelites as dictated by their end uses are: high humidity and moisture resistance; good film strength and abrasion resistance; excellent color retention in every color, allowing a wide range of baking conditions and resistance to light and heat after applied; good alkali resistance; resistance to



Bath can be automatically held to within ±1° F. by Sarco Electric Temperature Controller



Plant of Regal Plating Co., Inc., Providence, R. I. where 32 electroplating tanks are equipped with Sarco LSI Electric Indicating Temperature Controllers.

How low-cost Temperature Control ended "blue haze," pitting, burning

Regal Plating Co. now gets high quality plating with minimum of rejects

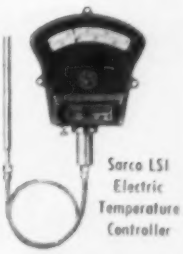
This well-known job plater specializes in high quality plating of costume jewelry and fishing lures. During an expansion program management ordered the elimination of these common plating difficulties: blue haze on nickel plate, pitting of copper plate and burning of sharp points.

These troubles were due to creeping bath temperatures . . . the result of *manual* temperature control, which is always unreliable.

To solve these problems and step up efficiency, Regal installed Sarco LSI Electric Indicating Temperature Controllers on all 32 plating tanks. Result: above troubles completely eliminated, rejects greatly reduced, no more burnishing of nickel plate.

Investigate the advantages of Sarco Temperature Controllers. Write for Handbook No. 6 or consult your Plating Supplies Jobber. Sarco Company, Inc., Empire State Bldg., New York 1, N. Y.

SARCO *improves product quality and output*



Sarco LSI Electric Temperature Controller

A COMPLETE SYSTEM FOR AS LITTLE AS $130 A TANK!

Accurate to ± 1° F. Simple. Dependable. Easily installed.

Easy-to-read controller dial indicates temperature being maintained. Temperature setting quickly changed by turning one knob.

2159-B

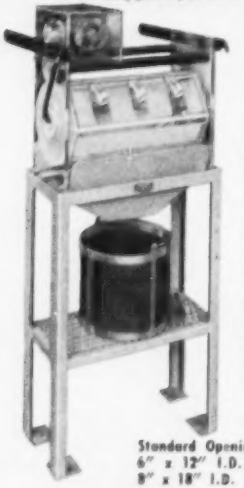
For more data circle **184** on Reader Service Card

WAIT!

Soon to be *Announced*

NEW
STUTZ
BELT DRIVEN
Production
Plating Barrel

with special features.....



STUTZ
Portable
Plating Barrels

- The Stutz Portable Barrel is made in 2 standard sizes with cylinders having inside dimensions of 6″ x 12″ and 8″ x 18″, I. D., and smaller upon application. Standard openings are 3/32″. Smaller or larger openings can be furnished as required.
- Baskets in perforated metals or wire mesh.
- Load/Unload Stand for convenient and fast handling of work load.

MADE IN TWO STANDARD SIZES

Standard Opening	3/32″
6″ x 12″ I.D.	$186.50
8″ x 18″ I.D.	$295.00
Stand	$ 39.50
Perforated metal	$ 9.15
Wire mesh	$ 6.15

Serving Industry GEO. A. STUTZ MFG. CO.
35 Years 4410 Carroll Ave. • Chicago 24, Ill.
For more data circle 185 on Reader Service Card

grease, dirt and food acids; resistance to weathering and chalking, and to damage from contraction and expansion of the base metal; a high rate of durability to salt spray and corrosion; and excellent light reflectance properties, which are important to manufacturers of lighting fixtures.

Formulation service is available in this line of industrial finishes to overcome specific application and performance problems.

Some of the products now being successfully finished with Nubelite include automatic washers and dryers, ironers, steel kitchen cabinets, water heaters, metal furniture, lighting fixtures, air conditioners, small appliances, metal desks, vacuum cleaners, and other metal products.

For more data circle 13 on Reader Service Card

★ ★ ★

Liquid Buffing Compound Cleaner

New Lixol, a water-soluble liquid cleaner to remove all types of buffing compound from ferrous and non-ferrous metals, has been announced by Cowles Chemical Company, 7016 Euclid Ave., Cleveland, Ohio. Patents have been applied for on this product.

New Lixol is mildly alkaline (pH about 9 at working concentrations). It is non-toxic and non-flammable, the manufacturer states.

New Lixol is used in substantially the same setup employed with an alkaline soak cleaner. Tank makeup calls for two gallons of the cleaner in 98 gallons of water (2 per cent by volume). Working temperature is 170 deg. F. Minimum immersion time is usually three minutes.

When buffing compound removal precedes storage, shipping, or further

ACME Automatics

FOR HIGH PRODUCTION at LOW COST on

POLISHING and BUFFING • DE-BURRING
WIRE BRUSHING and MICRO-FINISHING

• Proved performance and dependability in industry for half a century

RECOMMENDATIONS and QUOTATIONS

• We will be pleased to receive blue prints or preferably finished and unfinished samples of the part you contemplate finishing together with detailed information on present finishing operation and production requirements. On receipt of samples and data we will offer recommendations and quotations.

CATALOGS ON REQUEST

ROTARY STRAIGHT LINE SEMI-AUTOMATIC AND SPECIAL *Polishing and Buffing Machinery*

SPECIAL MACHINERY — AUTOMATIC BUFFING MACHINES

ACME Manufacturing Co.

1400 E. 9 MILE RD., DETROIT 20 (Ferndale) MICH.

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY

For more data circle **185** on Reader Service Card

Clean spray booths in a *FLASH* with BOOTHGUARD

SPRAY IT ON—in minutes
STRIP IT OFF—overspray goes with it

Only BOOTHGUARD
WATER-TYPE Coating is . . .

NON-INFLAMMABLE IN STORAGE!
Just as fire safe in its liquid state as it is when dry! No insurance risk — no special storage areas needed.

COVERS COMPLETELY WITH ONLY 1 COAT!
Costs less . . . and you use less. There is no feathering or webbing — less waste. One coat covers entire booth, dries fast and clings tight until you remove it.

STRONGEST COATING MADE!
BOOTHGUARD'S tough, elastic coating will not tear or shred when stripped. Pull it off — all at once.

WHITEST COATING!
BOOTHGUARD gives greater reflection, better visibility — and you use less. You'll have fewer rejects with BOOTHGUARD coating your booths.

See for yourself what BOOTHGUARD and METALGUARD can do for you.

SPECIAL INTRODUCTORY OFFER — 10% OFF 5 GALLON PRICE!

Distributors! Some territories still available!
SEND FOR FURTHER INFORMATION

GUARD
COATINGS CORPORATION
Manufacturers of a complete line of temporary protective coatings for metals, glass and enamel.
8-05 43rd AVE., LONG ISLAND CITY, N. Y.
EXeter 2-5317

For more data circle **187** on Reader Service Card

handling, a conventional spray rinse after immersion in this material is sufficient to remove loosened sediment from recessed and inaccessible areas.

When the washed parts are to be phosphatized, painted, or similarly finished, the soak in this cleaner is followed with a spray clean and spray rinse.

Before plating, the soak in New Lixol is followed with a spray clean, a spray rinse and a light reverse current electrocleaning operation. It can be used successfully in hard water.

New Lixol was developed primarily to remove impacted deposits of buffing compound from zinc base die castings —without harm to the metal. It works equally effectively, however, on aluminum, brass, copper, and steel.

For more data circle **14** on Reader Service Card

★ ★ ★

Washing Machine

Small parts can be high pressure spray washed in bulk by means of a small rotary drum batch type machine recently announced by The Alvey-Ferguson Co., 666 Disney St., Cincinnati 9, Ohio.

Parts are introduced into the machine through a chute. The A-F machine utilizes a drum with a helical spiral to tumble parts gently and expose all surfaces to the high-pressure spray nozzles inside the drum. The drum, perforated to permit draining of the solution, oil, chips and impurities, retains only the cleaned parts. On completion of the cleaning cycle, the drum counter-revolves, automatically discharging the clean parts into a container by means of a second chute.

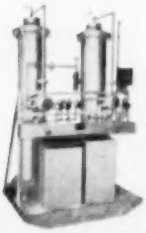
Location of both chutes on the same side of the machine minimizes space required and permits installation

FINISH IT BETTER . . .
PLATE IT BETTER . . .

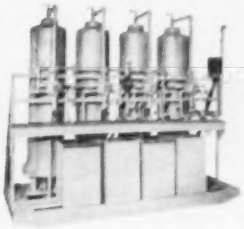
WITH

DEMINERALIZED WATER
PRODUCED BY
BARNSTEAD EQUIPMENT

Mixed-Bed Model, 50 gal./hr. Others to 2500 gal./hr.



2-Bed Model, 200 to 1000 gal./hr.



4-Bed Model, 30 to 1000 gal./hr

In rinsing, plating, make-up, anodizing, dye-baths, where Pure Water is needed, free from harmful minerals, manufacturers know that they can save money, reduce rejects, and attain better product control by using Barnstead Demineralized Water

The cost? As little as 5c per 1000 gallons. Operation is simple — easy. Set in place and connect your water service lines. No on-the-job assembly problems.

With a Barnstead Demineralizer you get the benefit of over 75 years of specialized experience in Pure Water — either demineralized or distilled — for Barnstead makes both types of Pure Water equipment. Write for Catalog #123.

Barnstead STILL & STERILIZER CO.
First in Pure Water Since 1878

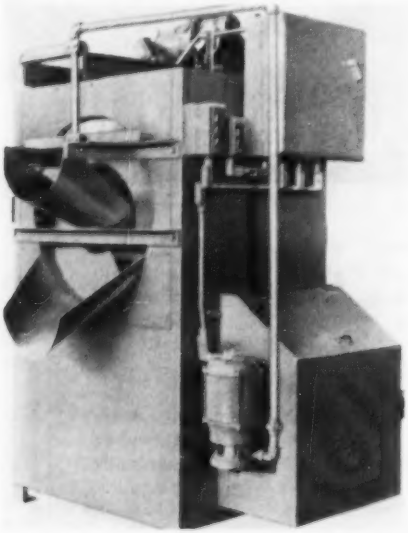
12 Lanesville Terrace, Forest Hills, Boston 31, Mass.
New York Office: KIngsbridge 8-1557

For more data circle 188 on Reader Service Card

against other machinery or walls.

The cleaning cycle can be either manual or automatic. If the installation is automatic, an adjustable timer is provided.

Draining and drying of parts is accomplished through tumbling with pump off as parts are discharged.



Compact washing machine cleans small parts

Drums can be made for any given batch capacity; a volume of two cubic feet has been found ample for most operations. Cleaning solutions may be heated by steam, gas or electricity.

This Alvey-Ferguson development features welded construction, easy accessibility to all parts, and high quality filter screens.

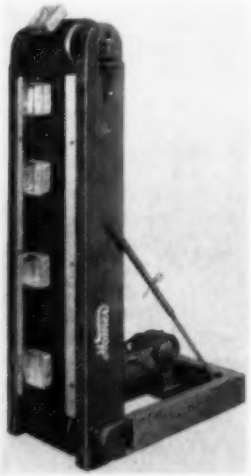
High production (up to 20 cu. ft. per hour) is significant in view of the small space requirement.

For more data circle **15** on Reader Service Card

Magnetic Conveyor

Close grouping of machines to save floor space and increase automation is possible with the Homer "Space Saver" Magnetic Conveyor, a product of The Homer Manufacturing Co., Inc., Lima, Ohio.

Because it conveys ferrous pieces and parts such as nuts, bolts, nails, washers, tin cans, bottle caps, and stampings, up inclines as steep as 90 degrees, Homer "Space Saver" Magnetic Conveyor makes it possible to place production machinery closer together. It also automatically stacks flat ferrous pieces, feeds machines and performs other handling operations. Conveying speeds can be planned so that material transfer between machines may be synchronized for automatic operation.



Magnetic Conveyor

Homer Magnetic Conveyors are available in stationary or portable types — standard or custom units for new or existing production lines.

For more data circle **16** on Reader Service Card

Has 2 ball bearings for medium duty Buffing and Polishing with motor from 2 to 5 H.P. Affords utmost freedom of operation for handling of large and awkwardly shaped parts.

Has 4 ball bearings for heavy duty production work with motor from 3 to 10 H.P. Distance between wheels either 45 or 60 inches.

Illustrated above are 2 of the 63 standard types and sizes of "HISEY" Buffing and Polishing Machines. The belt-driven types shown are most popular, however, and can also be furnished in direct-driven types with wheels directly on motor spindle.

GUARANTEED ANNUAL PERFORMANCE

DUST COLLECTORS

This bag-type Dust Collector illustrated above is made in 3 popular sizes. Cyclone-type also available in 3 sizes.

Year in and year out, "HISEY" Buffing and Polishing machines are on the job. This is guaranteed by certain basic design principles embodied in all sizes dictated by the "know-how" accumulated through constant improvement since 1896. Examples are alloy steel spindle, ample size ball bearings adequately lubricated, and sufficient weight scientifically distributed where it will do the most good.

Ask for Catalog 72 PX

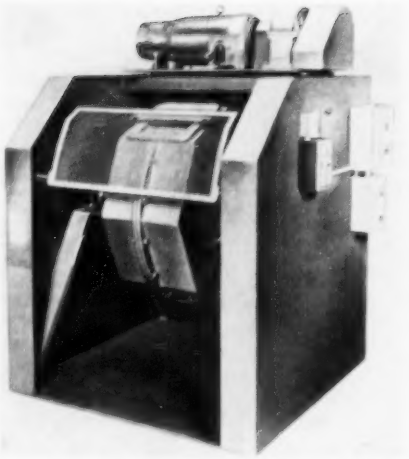
Hisey THE HISEY-WOLF MACHINE CO.
CINCINNATI 8, OHIO
Division of The Cincinnati Electrical Tool Co.

For more data circle 189 on Reader Service Card

Cutting Barrels

The Hartford Steel Ball Company, 14 Jefferson Ave., West Hartford 6, Connecticut, has introduced two fully enclosed cutting barrels with 10 and 4 cu. ft. capacities. They speed deburring, descaling and polishing on screw machine parts, stampings, and castings. Parts can be processed by any tumbling method — abrasive chip process, ball and steel shape process, branded compound or other media.

The power unit is on top for ease of maintenance. This feature also permits compact design. Other features include greater accessibility of controls, which are grouped together; drum type reversing switch; 24 hour program timer that can be set for any cycle from 15 minutes to 24 hours with automatic control; magnetic starter and brake which permit inching of barrel into loading and unloading positions; tilt-back front safety guard; and improved 4 speed gear shift control, permitting barrel speeds of 8, 11, 18 and 33 r.p.m. on the 10 cu. ft. model and slightly higher proportionate speeds on the 4 cu. ft. model. Other speed ranges can be supplied. Optional features include single speed or variable speed drives; hollow shaft with rotary pressure joint that permits permanent water connections for faster filling and flushing of barrel. These models can be supplied with neoprene lined barrels. As a safety feature, barrels have a pressure vent in cover.



Hartford 4-speed Triple Action Cutting Barrel

For more data circle 17 on Reader Service Card

★ ★ ★

Graduated Siphon Cup

A graduated siphon cup designed to eliminate errors in paint reduction for spraying has been announced by the Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

The graduations are stamped into the cup, and are visible on the inside and outside. The markings show fluid levels for ratios of 1-to-1, 2-to-1, and

YOU can rely on

Randolph

for prompt shipment

in any quantity of

· FINISHES ·

Lacquers • Enamels
Dopes • Thinners
Clear Metal Finishes
Colored Lacquers
Clear S.G. for Metal
Texture Enamels
Specialized Production Finishes
Aircraft Finishes

RANDOLPH
PRODUCTS CO.
CARLSTADT, NEW JERSEY

For more data circle 190 on Reader Service Card

When you want close quality control, *you use Bonderite under the paint.*

"GOLD STANDARD" PANELS are Bonderized

Parker's Customer Service lab prepares Bonderite-treated panels, used as the standard of comparison by manufacturers and paint companies. We have shipped about 400,000 in the last 12 months.

● The test panels in the plant laboratory tell the story: Bonderite in the finish line is the quality control engineer's friend. Performance standards are more easily maintained. And when standards are maintained in the plant, product performance in the field will please your customers.

The secret of Bonderite's uniform results begins in Parker manufacturing plants, where each lot of chemical is numbered and tested. A sample is kept permanently. Operating procedures for processing are simple, easily followed, easily checked. Long experience has smoothed out all the kinks!

Take the most positive way to control quality and assure finest paint finish, durability and appearance—use Bonderite.

**Bonderite, Bonderlube, Parco, Parco Lubrite, Parker Pre-Coat—Reg. U.S. Pat. Off.*

PARKER RUST PROOF COMPANY
2172 E. MILWAUKEE, DETROIT 11, MICHIGAN

Since 1915—leader in the field

BONDERITE corrosion resistant paint base

BONDERITE and BONDERLUBE aids in cold forming of metals

PARCO COMPOUND rust resistant

PARCO LUBRITE wear resistant for friction surfaces

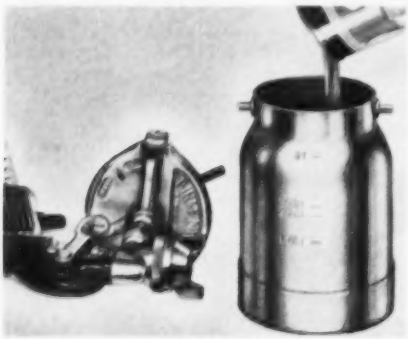
TROPICAL heavy duty maintenance paints since 1883

For more data circle 191 on Reader Service Card

3-to-1, as well as a mark for the one-quart level.

The rolled top of the cup ensures a good seal on the cover gasket and strengthens the top rim, according to the manufacturer.

The large open top, plus the well-



Binks graduated cup for paint (right). Spray gun is shown attached to the cup cover (left).

rounded graduations on the inside simplify cleaning of the cup.

This cup can be used with all makes of spray guns. Cup attachments are available for ¼- and 3⅜-inch standard pipe thread fluid connections and for 9/16-inch-20 connection.

For more data circle **18** on Reader Service Card

Fast-Dry Enamel

A line of fast-drying synthetic finishes for manufacturers of heavy equipment such as farm and road machinery and machine tools has been introduced by the Du Pont Company Finishes Division, Wilmington, Delaware.

Named 113-Line Fast Drying Finishes, the pigmented enamels in most colors set up so rapidly the ware can be handled in about 15 minutes, it is stated. The material is tack-free in two to three hours.

In addition to the fast dry feature of the special vehicle developed by Du Pont for the finish, 113-Line has excellent adhesion applied directly to solvent cleaned metal. Of particular interest to machine tool producers is its good resistance to gasoline and oil.

Flexibility, water-resistance, and general durability are rated as good.

For more data circle **19** on Reader Service Card

★ ★ ★

Compact Plating Plant

Incorporating the features and automatic equipment usually found in large, mass production plating installations, the Sel-Rex "Jet Plater" is said to be a complete electroplating plant in a compact, portable unit.

Fully automatic in operation, the Jet Plater consists of a Sel-Rex selenium rectifier with automatic timer, stainless steel tank (which may serve as the

NOW
FUSECOAT
"T"
coating of
Tungsten Carbide
Licenses available
U.S. PAT. #2,694,647

LONGER WEARING FIXTURES
For Polishing and Buffing Machines

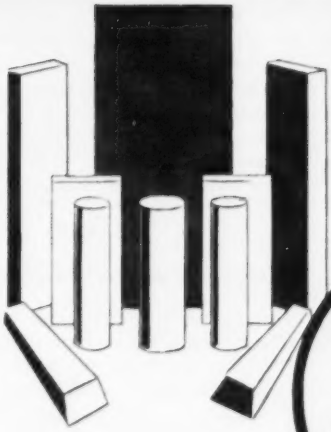
Your buffing and polishing fixtures that are subject to wear can now be FUSECOATED to last longer. Fixtures designed for FUSECOATING can be lighter and are less expensive for you to make. Procedure sheets are available. Write for folder or send us drawing or sample of part to be coated. We will send you a cost estimate and approximate delivery date by return mail.

FUSION METAL COATING CO. • 25493 W. 8 MILE ROAD DETROIT 19, MICHIGAN

For more data circle **192** on Reader Service Card

Now! FOR THE FIRST TIME SCHAFFNER

Brings you No Nubbing Compound!



FOR AUTOMATIC, SEMI-AUTOMATIC, HAND MACHINES

● At last something has been done to eliminate what has been a major problem in the polishing and buffing industry. Schaffner's brand new "No Nubbin" Stick Compounds can be used on your present equipment with absolute safety. No more flying nubbins.

By using Schaffner "No Nubbin" Stick Compounds, which have been production proven, you can realize a saving up to 75%.

Schaffner
manufacturing company, inc.

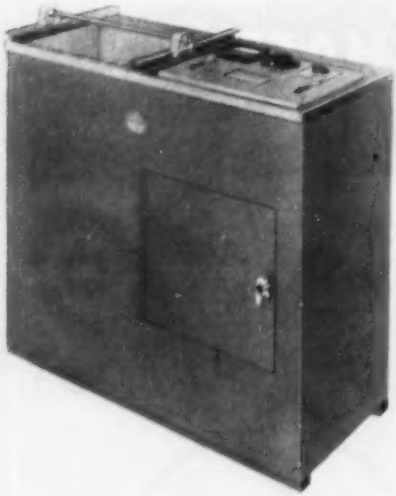
Why not call or wire us collect for more information and samples.

SCHAFFNER CENTER

EMSWORTH • PITTSBURGH 2, PA.

For more data circle 193 on Reader Service Card

It's New



Complete Plating Plant in Compact Unit

anode) fitted with a water jacket for temperature control; a movable work rack which will accommodate a portable plating barrel; a centralized control panel equipped with Weston ammeter and powerstat control; a filter; and a drip-proof pump with motor.

The name of the Jet Plater is derived from the "jet" agitation used in the unit. This is accomplished through a pump and perforated stainless steel tube at the bottom of the plating tank. The constant motion of the solution around the work, the manufacturer states, helps ensure consistently smooth, even deposits, and high quality plating.

Standard models require approximately 18 by 38 inches of floor space, and are available in 10, 20 and 30 gallon capacities. All models can be used for still or barrel plating of any precious metal solution, small volume acid or alkaline solutions, conventional or bright.

Descriptive literature on the Jet Plater may be obtained from Bart-Messing Corporation, Dept. PF, 229 Main St., Belleville 9, N. J.

For more data circle **20** on Reader Service Card

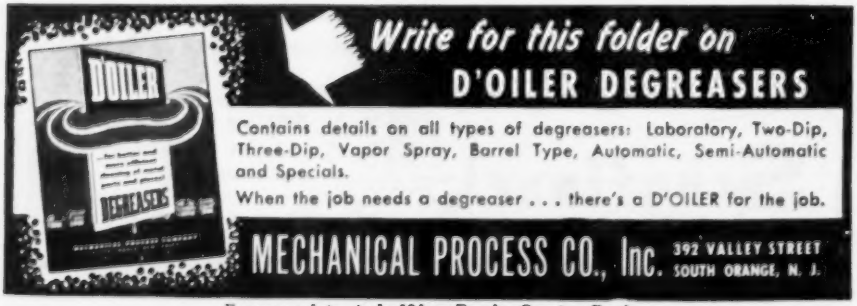
★ ★ ★

Small Pressure Tank

A small pressure tank with an air-operated agitator which maintains continuous agitation of finish while the spray operator works, has been announced by the Eclipse Air Brush Co., 390 Park Ave., Newark, N. J.

This model comes in one, two or four-quart sizes. It permits complete freedom of movement by the operator and may be used with any make of spray painting equipment.

Since its air-operated agitator keeps the spray material continuously mixed, the mite-sized pressure tank is par-


Write for this folder on
D'OILER DEGREASERS
Contains details on all types of degreasers: Laboratory, Two-Dip, Three-Dip, Vapor Spray, Barrel Type, Automatic, Semi-Automatic and Specials.
When the job needs a degreaser . . . there's a D'OILER for the job.
MECHANICAL PROCESS CO., Inc.
392 VALLEY STREET
SOUTH ORANGE, N. J.

For more data circle **194** on Reader Service Card

It's New

The FINISHING INDUSTRY'S only complete directory

OUTSTANDING...

in Editorial Features

in Circulation

in Advertising Value

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circulation (guaranteed) among users of painted and plated finishes

- More Circulation in the plating field
- More Circulation in the painting field
- At Less Cost Per Thousand circulation than any other metal finishing publication, regular or directory issue!

Expose your advertising to the industry's most influential buyers in a media that enjoys year 'round use . . . PRODUCTS FINISHING Directory.

Advertising rates are based on space run in the regular issues of PRODUCTS FINISHING. The Directory can be used individually or in combination with monthly issues to earn the four, seven or thirteen time rate.

Complete details are available in a new brochure ready now.

Write for your copy today or contact your PRODUCTS FINISHING representative.

Single source reference to:

- Alphabetical Listing of Products and Processes
- Listing of Manufacturers Alphabetically by Product
- Names and Addresses of Manufacturers of Finishing Equipment and Processes
- Product Literature

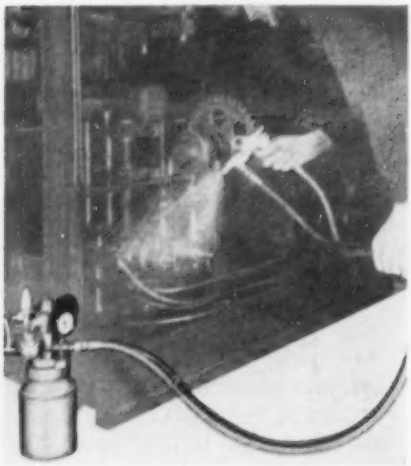
products finishing directory

Gardner Publications, Inc.
—also publishers of Products Finishing and Modern Machine Shop
431 Main Street
Cincinnati 2, Ohio

1956 Edition
Issued March 15, 1956
Closing Date: Feb. 15, 1956

ticularly suitable for handling quick settling finishes, metallics and other coatings.

Other applications are for production painting of small parts, frequent color change production, laboratory testing, pilot plant production, and other similar setups.



Miniature agitated paint pressure tank

For more data circle **21** on Reader Service Card

Aerosol Packaged Primer

Aerosol Zinc Chromate Metal Primer

Krylon, Inc., has announced an aerosol packaged zinc chromate primer.

Zinc chromate, used to prepare bare metal surfaces for final paint or other coatings, is one of a line of products which include crystal-clear acrylic spray, 15 different colors of spray enamels in aerosol cans and the Krylon metal polishing kit.

The spray zinc chromate primer can be used in manufacturing plants as a bonding agent and over nuts and bolts and small parts to which enamel would not otherwise adhere.

The zinc chromate can be sprayed onto any bare metal quickly and evenly with the Krylon aerosol container. Enamel over the Krylon primer will not peel or crack, it is stated.

Krylon zinc chromate primer spray will not settle hard in the container. It sprays on smoothly and dries with a firm finish in a matter of minutes.

For more data circle **22** on Reader Service Card

METABOND

MEANS *PROGRESS* IN RUSTPROOFING

METABOND is the only effective immersion or spray amorphous type zinc coating in the industry today.

METABOND withstands severe and consistent flexing and bending without chipping or breaking bond.

INTERNATIONAL RUSTPROOF CORPORATION

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MANUFACTURERS OF RUST PREVENTIVES AND CORROSIVE SOLVENTS

For more data circle **196** on Reader Service Card

Cadmium Fluoborate
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Harshaw Fluoborate Plating Chemicals

Select the nearest Harshaw Branch...

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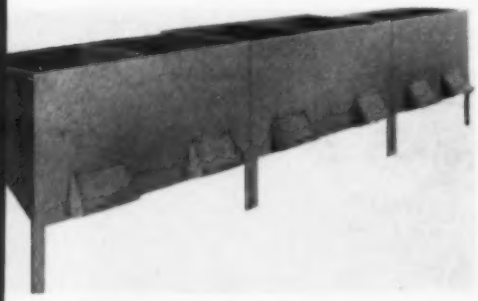
CLEVELAND 6, 1945 East 97th Street
DETROIT 28, 9240 Hubbell Avenue
HASTINGS-ON-HUDSON 6, N. Y.
HOUSTON 11, 6622 Supply Row
LOS ANGELES 22, 3237 South Garfield Avenue
PHILADELPHIA 48, Jackson and Swanson Streets
PITTSBURGH 22, 505 Bessemer Building
6th Street & Fort Duquesne Blvd.

THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

For more data circle 197 on Reader Service Card

Chip Bins

"Lorco" two-compartment bins to hold aluminum-oxide chips for barrel



Three sizes of Lorco 2-Compartment Chip Bins

tumbling, manufactured by Lord Chemical Corp., Dept. AB, 2068 S. Queen St., York, Pa., are furnished with gates that assure positive control of the chip flow. Each gate is raised outwardly in a short arc from the wall of the bin so that the action of gravity will prevent any chips from interfering with the closing of the gate. The entire gate assembly is replaceable when worn.

The bins are furnished in three sizes:

No. 2B-22 has two compartments, each having a volume of 22 cu. ft. Each compartment will hold approximately 1,400 pounds of chips; total capacity of the bin: 2,800 pounds. Floor space occupied by the bin is 25 by 48 inches.

No. 2B-30 has 32 cu. ft. compartments, each holding approximately 2,000 pounds of chips; total capacity, 4,000 pounds. Floor space, 31 by 56 inches.

No. 2B-40 has 40 cu. ft. compartments, each holding approximately 2,600 pounds of chips; total capacity, 5,200 pounds. Floor space, 36 by 60 inches.

For more data circle **23** on Reader Service Card

★ ★ ★

"Cold" Curing Agent

A curing agent that can greatly extend the uses of "catalyzed" Epon* resin paints—especially under adverse weather conditions has been announced by Shell Chemical Corporation, 50 W. 50th St., New York 20, N. Y.

The product, called Curing Agent C-111, is a "cold" curing agent. Paints cured with it at room temperature are said to exhibit film properties of chemical and physical resistance ordinarily achieved only in baked surface coatings.

The product reduces or eliminates "curing agent blush" on films cured under conditions of high humidity. It also gives an excellent rate of cure at temperatures well below room temperature —as low as 35-40 deg. F.

Curing Agent C-111 is now available in trial lot quantities. The properties of the curing agent, formulations incorporating the curing agent, and film properties are described in detail in Shell Chemical Corporation's Techni-

*Reg. Trade Mark, Shell Chemical Corp.

Filter your solutions!
50-2400 GAL/HR.
Model ASI-600. Cap. 600-900 g/hr. Sethrin* Resin Filter Assembly. Stainless Centrifugal Pump. Totally Enclosed Motor. Portable. Wt. 150 lbs. 2'x2'x2'.
*Reg. pp. For
PARTIAL LIST OF MODELS
Model
Rated Capacity
Overall Size
Weight
LSI-5
LSI-10
ASI-300
ASI-600
RLS-1200
50 gal/hr
100 gal/hr
300 gal/hr
600 gal/hr
1800 gal/hr
11"x14"x12"
13"x16"x16"
2'x2'x2'
2'x3'x2'
3'x3'x3'
30 lbs.
40 lbs.
125 lbs.
130 lbs.
300 lbs.
SERVICE . . . Filters practically any acid or alkaline solution from pH 0 to pH 14; removes particles down to one micron in size. Strainer stops metallic objects.
DESIGN . . . Filter Assembly fabricated of stainless steel 316, high temperature lucite, rubber-lined, Haveg or Sethrin* resin. Filter Tubes of cotton, dynel, porous stone or porous carbon. Pumps fabricated of Hastelloy, stainless 316 or plastic, centrifugal or self-priming. Motors drip-proof, totally enclosed, or explosion proof, 110 or 220 volt, single or three-phase, 50 or 60 cycle, sleeve or ball bearing. Base — special acid and alkali resistant. Base — Linen Phenolic laminate on rubber tire ball bearing casters.
Sethco MANUFACTURING COMPANY
70-72 Willoughby Street • Brooklyn 1, N. Y.
For more data circle **198** on Reader Service Card

These clock faces give the appearance of costly metals. Actually, they are inexpensive plastic coated with aluminum under high vacuum. This covers the parts with a soft silvery finish, or . . . after a simple lacquering operation, the finish of burnished copper. Other lacquers provide a rainbow of colors to brighten your products and sales picture. The whole process is easy and economical.

"Vacuum metallizing gives us a much wider market for our molded plastics and additional profit for the operations performed after molding."

W. C. Conray, Sales Manager
Plastics Division Erie Resistor Corporation

Erie Resistor Corporation, Erie, Pa., uses a battery of *CVC* vacuum coaters to give inexpensive plastic parts the rich finish of costly metals.

Coating parts with aluminum under high vacuum and applying various lacquers can give them the attractive appearance of gold, silver, copper, or a whole rainbow of other metallic colors.

The two clock faces shown above, for example, have the soft sheen of burnished copper and silver. Stringent tests (see below) show that the metallized finish is durable. Rough usage leaves its color and shine unmarred.

Vacuum metallizing is simple and inexpensive. A few hours training makes any of your help expert in the metallizing operation. Just a few ounces of aluminum covers thousands of parts. The process works as well with basic metals as with plastics.

You are welcome to share our experience in high-vacuum metallizing and associated lacquering operations.

We will be glad to discuss any particular applications with you.

Tests used by Erie Resistor on the metallized finish of the clock faces:

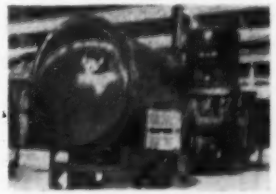
Scratch test. Cut cross-hatched lines approximately $\frac{1}{16}$" apart with sharp tool. Stick clear adhesive tape over the surface. When tape is removed, finish should remain on part.

Temperature shock. Place parts in 140° F. oven for two hours. Remove and place immediately in −20° F. cold chamber (air).

Humidity test. Expose parts to 120° F. for two hours and then to 92% R.H. at room temperature (86° F.). Four cycles of this exposure.

Fading test. Expose samples to ultraviolet light for 100 hours using a Corning 5" DCVX RDL-type filter with a G.E. 1000-watt, RH-4 mercury vapor lamp located 2" from the samples. No fading or discoloration should occur.

The above tests should not cause any observable change in the finished parts.



This 48" vacuum coater is one of three CVC production coaters used by Erie Resistor. Smaller sized models also available from CVC provide economical operation for short production runs. We deliver these units with all necessary equipment and controls—ready to install.

Consolidated Vacuum Corporation Rochester 3, N. Y.

a subsidiary of CONSOLIDATED ENGINEERING CORPORATION, *Pasadena, California*

Headquarters for High Vacuum

CVC sales now handled through Consolidated Engineering Corporation with offices located in: Albuquerque • Atlanta Boston • Buffalo • Chicago • Dallas • Detroit • New York • Palo Alto • Pasadena • Philadelphia • Seattle • Washington, D. C.

For more data circle **199** on Reader Service Card

cal Bulletin SC: 55-32, "Epon Resin Vehicle Formulation XA-201 Incorporating Experimental Epon Curing Agent C-111," which is available from Shell Chemical Corporation.

For more data circle **24** on Reader Service Card

★ ★ ★

Fittings for Polyethylene Pipe

Couplings and adapters for use with polyethylene pipe have been developed by Wilmington Plastics Co., 810 S. Heald St., Wilmington, Del. The fittings, injection molded from rigid unplasticized polyvinyl chloride, are resistant to corrosive action and form a tight joint without setting up compressive stress in the polyethylene, it is stated.

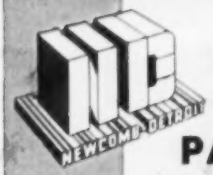
Fittings for Polyethylene Pipe

They are available in couplings, polyethylene to polyethylene; adapters, polyethylene to metal, in ¾-inch and 1-inch sizes; and up to and including 2-inch pipe size.

For more data circle **25** on Reader Service Card

NEWCOMB-DETROIT

PIONEERS IN ENGINEERING, MANUFACTURE AND INSTALLATION OF



INDUSTRIAL OVENS
SPRAY BOOTHS
PARTS WASHERS
DUST COLLECTORS
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ESTABLISHED 1912
DETROIT DIVISION—GRAND RAPIDS DIVISION—
NEWCOMB INDUSTRIES LTD., WINDSOR DIVISION

For more data circle **200** on Reader Service Card

ASK BAIRD ABOUT IT!

TUMBLING BARRELS FOR MORE THAN 50 YEARS

CLEAN-LIMBED *and* MUCH MORE EFFICIENT

new BAIRD MODEL H OBLIQUE TILTING TUMBLING MACHINES

Easier to operate . . . easier to service . . . easier to maintain . . . Baird Model H Oblique Tilting Tumbling Machines mark a major step forward in design and engineering of production-line equipment of this type.

Every control is at the operator's fingertips. Every detail is planned for trouble-free operation, maximum utility, and simplified maintenance. Manual-hydraulic or power tilting.

Note especially the ample areas for handling loads and clean pedestal design for efficient housekeeping. Note also the excellent protection afforded electrical and mechanical components. Adaptable to a full selection of standard types and shapes of barrels. Fully counterbalanced for smooth, fast operation. Little floor space is needed, and machine is offset on base for solidity. Motor acts as balance for load.

Save time, improve working conditions, and step up quality with this newest Baird high production aid. Write Dept. PF for complete information.

JBASSM

the BAIRD MACHINE COMPANY
STRATFORD • CONNECTICUT

AUTOMATIC MACHINE TOOLS • AUTOMATIC WIRE & RIBBON METAL FORMING MACHINES • AUTOMATIC PRESSES • TUMBLING BARRELS

For more data circle 201 on Reader Service Card

Vacuum Sheet Lifter

F. J. Littell Machine Company, 4127 Ravenswood Avenue, Chicago 13, Illinois, has announced development of an 8-cup Vacuum Roll-Over Sheet Lifter.

Vacuum Roll-Over Sheet Lifter

This lifter has a lifting capacity of approximately 14,000 pounds. It can handle sheets of any non-porous material up to 5 feet wide by 20 feet long weighing up to 2,000 pounds. The lifter is equipped with a U-hook for attaching to an overhead crane. Sheets may be moved to any location in the plant. Lifting of the sheets is accomplished by vacuum produced by two pumps. The vacuum is conveyed by tubes through a storage tank to the 8 rubber cups. No scratches can be made on the sheets, as only rubber comes in contact with the surface.

The Littell Roll-Over Sheet Lifter has the ability to rotate the sheet 180 degrees. The sheet or plate when inverted can be carried with complete safety and without dependence upon vacuum. Rotation may be stopped at any angle from horizontal to 180 degrees, making inspection of both sides of sheet possible. It also provides a means of vertical stacking of sheets.

For more data circle **26** on Reader Service Card

★ ★ ★

Brush Electroplater

Developed primarily for re-touch and repair work on plated equipment and parts, the brush method of electroplating has been growing in popularity as an electroplating production process.

The Ajax-Consolidated Company, 4607 W. 20th St., Chicago, Ill., reports increasing demand for brush plating units among electrical contractors, because brush plating provides an easy method of meeting specifications, eliminates overheating in electrical circuits, reduces oxidation, and allows quick and easy rehabilitation and repair work, without disassembling.

Telephone and power companies, public utilities, steel, chemical and heavy industrial plants have begun to utilize the brush plating method, as it

GLO-QUARTZ*
IMMERSION HEATERS
for
ALL ACIDS, ALKALIES, WATER, ETC.
GLO-QUARTZ ELEC. HEATER CO., INC.
WILLOUGHBY, OHIO
*Trademark Reg. U. S. Pat. Off.

For more data circle **202** on Reader Service Card

First complete unitized cleaning method to fit every production line!

Races Before Entering Aja-Lif "Merry-Go-Round"

They Come Out Completely Clean

For the first time, effective cleaning of metal parts can be tied into a fully automatic high speed production line. This concept of production line cleaning is new in every step of the operation and is exclusive with Magnus.

The Aja-Lif "Merry-Go-Round" is an example of this Magnus method of completely automatic unitized cleaning. Large bearing races are placed in constantly moving baskets which automatically carry the parts into the various stages of *cleaning by agitation.*

The right Magnus Method of cleaning . . . the specialized Magnus Cleaners . . . a completely mechanized cleaning procedure is developed to suit your own particular production line cleaning requirements.

Write to Magnus, 208 South Avenue, Garwood, N. J., for your copy of Bulletin 10,000 G the new 36-page manual of Material, Methods, Machines.

magnus

INDUSTRIAL DIVISION
MAGNUS CHEMICAL CO., INC.

For more data circle 203 on Reader Service Card

helps prevent down time ordinarily necessary when equipment must be dismantled for plating.

Brush Electroplating Kit

It is significant to maintenance and operations men that properly plated equipment prevents heating in overloads, and the useful life of switchgear is increased. Loss of voltage in fabricated bars is reduced. Also, plating prevents oxidation.

Resistance welders and users and manufacturers of electrical furnaces find silver plating essential where there is a low voltage, high amperage situation. Corrosion of bus bars causes loss of current, and brush plating or replating is simple and quick.

The firm further states that the bond of brush deposited metal is excellent.

The continual movement of the brush or applicator during plating is said to produce a burnishing action, resulting in a deposit of dense and uniform solid metal. Brush electrodeposits are resistant to cracking or peeling off, even under severe operating conditions.

The base metal upon which plating has been applied can be heated to 1500 deg. F. and instantly quenched in cold water or oil without damage to the bond or deposits.

Ajax-Consolidated Co. offers complete industrial equipment with brushes, plating solutions and anodes for plating brass, bronze, cadmium, cyanide copper, sulfate copper, gold (24 carat), lead, nickel (plus cobalt), nickel (black), silver, tin and zinc. Three power units are available: 110-120 volt a.c. 50-60 cycle; 110-120 volt a.c. 25 cycle; 220 volt a.c. 25 or 60 cycle.

For more data circle **27** on Reader Service Card

★ ★ ★

Portable Ovens

The Carl Mayer Corporation, 3030 Euclid Ave., Cleveland 15, Ohio, has announced a line of portable industrial ovens for use in closely controlled production and laboratory work. These

PAINT MIXER

MIRACLE PAINT REJUVENATOR

All paint restored to original consistency without opening the can.
2 minutes per gallon.

MIXERS AVAILABLE
¼ PT. to 55 GALS.

MIRACLE PAINT REJUVENATOR COMPANY
127 E. 9th St., St. Paul 1, Minn.

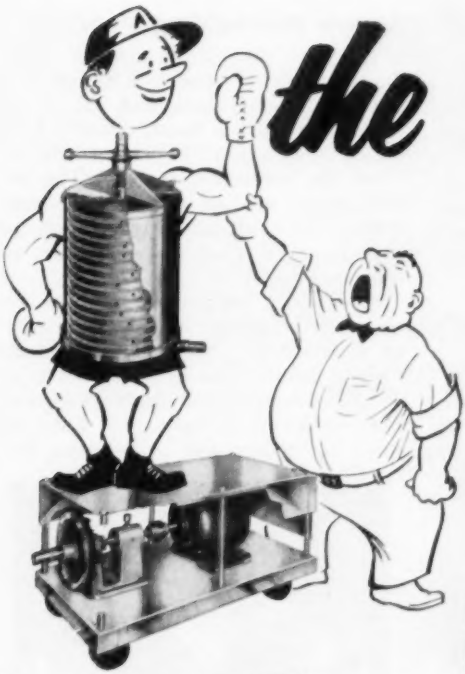
5 GAL. MODEL

For more data circle **204** on Reader Service Card

GETTING MORE

"I am getting more from your course than I could have gotten in a year of Sundays from experience only," writes Homer Swain, plater, Corpus Christi, Texas. Likewise, you too, can be getting more from this outstanding home study course in modern electroplating. Why not investigate? Write to Joseph B. Kushner, Electroplating School, 115 Broad Street, Stroudsburg 20F, Pa., TODAY!

For more data circle **205** on Reader Service Card



the Winner

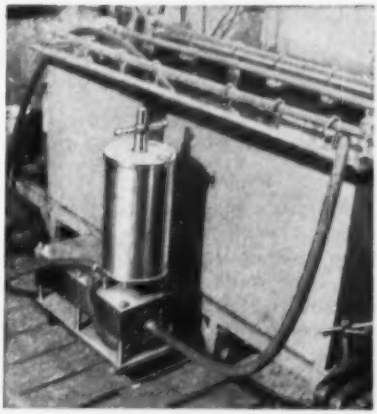
on all counts

against pitting, spotting, rejects and reworking

EVERY TIME

The Alsop "Sealed-Disc" Filter is a sure winner *everytime* that it's called on to knock-out dirt, sludge and even the invisible impurities from your Plating Solutions.

"Sealed-Disc" Filters remove more impurities with less effort and in no time at all. That's because they're designed to meet Plating room requirements. They're smaller than conventional filters, yet capable of handling equal volumes of solutions. It will pay you to invest in a *Winner* —"Sealed-Disc" Filter. You can depend on its proved "knock-out" performance for continuous or now-and-then operations. See your regular Plating Supplier or write for a Catalog—it's free.



You can depend on a "Sealed-Disc" Filter for better finished plated work with savings in time and labor. Use it on your acid dips, electro cleaners, and solvents too.

ALSOP
ENGINEERING CORPORATION

1101 Keen Street • Milldale, Connecticut

Positive Filtration

FIRST STEP IN CUTTING COSTS

For more data circle 206 on Reader Service Card

cabinet ovens are available with either horizontal or vertical air flow. Specially designed for temperature uniformity, the ovens employ a high pressure motor driven blower to propel the heated air in a definite air-flow pattern through the work chamber. This helps prevent

Model HB Series Portable Oven

disturbance due to radiant heat.

Some of the other features of this oven include no metal-to-metal contact, high and low heat switch for close control and quick recovery, electrical interlock for turn-off of heat in case of blower motor failure, and Inconel-sheathed "Life-time" heating elements. Partlow indicating temperature control is standard equipment.

For more data circle **28** on Reader Service Card

Spray Metalizing Process

A spray metalizing process introduced by Jema Chemical & Supply Co., 191 South St., Newark 5, N. J., is said to produce a hard, durable high lustre finish requiring no treatment beyond the protective coating. The resultant top coating may be left clear with a silver-chrome appearance, or may be dyed gold, brass, copper, or other colors.

The spray metalizing process requires only seconds, and can be operated mechanically or manually. There are no limitations as to the size or weight of items which can be processed.

In addition to standard finishing room equipment (air compressor, lac-

Some parts finished by spray metalizing

quer booth, baking oven, racks or jigs), the only equipment required is a spray metalizing booth and a few accessories.

The spray metalized surface will

Send NOW for this FIT-ALL
DRUM PLUG WRENCH
Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!

THOUSANDS IN USE saving time, labor, accidents!
SATISFACTION GUARANTEED . . . **$3.60**
Non-sparking type $5.60
Plus Parcel Post
MORSE MFG. CO., Inc.
762 W. Manlius St., E. Syracuse, N. Y.

For more data circle **207** on Reader Service Card

Millions of toys parade through Ideal Toy plant

INCREASED PRODUCTION THROUGH FAST, SIMPLIFIED CLEANING

Sel-Rex **FILTERS**

FOR LIQUID CLARIFICATION OR SOLIDS RECOVERY

"The fact that it takes 15 minutes or less to clean our Sel-Rex Filter has helped us increase production appreciably, in our electroforming operation. We spend more time filtering — less time cleaning," says Mr. A. R. Miller, chief chemist, Ideal Toy Company. "Another cost-cutting advantage is the use of unskilled help, thanks to the unique color-coded valves."

Ideal Toy Company is one of many Sel-Rex Filter users who enjoy the fruits of expert filter engineering know-how. If your manufacturing operation entails solids recovery or liquid clarification, it will pay you to investigate Sel-Rex Filters—the fastest cleaning filters on the market.

Sel-Rex Double Duty Filters use either a new stainless steel mesh element or POROUS STONE membrane. The entire element is secured to the tank cover—lifts out freely and easily for cleaning, by hand or with a hand-operated davit mounted on the shell on larger models. Messy handling of wet and dirty elements is eliminated—you can even clean an element used for carbon treatment without soiling your hands.

Standard portable, mobile and stationary models from 250 to 18,000 GPH capacity. Larger models built to specifications. Cut filtering costs — send for technical literature today.

BART-MESSING CORPORATION

Dept. PF-1, 229 Main Street, Belleville 9, N. J.
Newark Detroit Los Angeles

For more data circle 206 on Reader Service Card

stand 200 hours at 120 deg. F. in 100 per cent humidity and sulfur atmosphere with no loss of adhesion or tarnish, the manufacturer states.

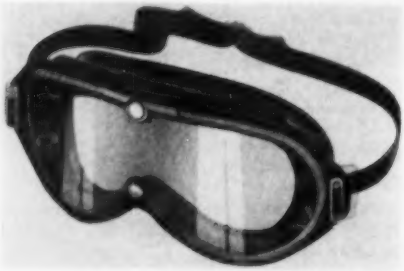
Jema Chemical & Supply Co. supplies coatings, finishes and technical assistance in setting up the spray metalizing process.

For more data circle **30** on Reader Service Card

★ ★ ★

Safety Goggles

Rubber mounted goggles, featuring a heavy, one piece, replaceable lens of impact resistant acetate plastic have been made available by Horton, Church & Louttit, Inc., 49 Peck St., Providence, Rhode Island.



Rubber mounted safety goggles

SOLVENTS and THINNERS RECOVERED

from wash thinners, spoiled lacquers, degreasing machine sludge, etc.

Solvents recovered by the Lofgren Process.

Each customer's shipment, whether one drum or a carload, receives proper and separate treatment. Write to:

Solvents Recovery Service, Inc.
1025 Broad St. Newark 2, New Jersey

Hammond Solvents Recovery Service
241 Brunswick Rd. Hammond, Ind.

For more data circle **209** on Reader Service Card

The standard model has an 040 lens, but special lens compositions and 060 pre-formed lenses are available on request. They have replaceable fabric filters or wire screen filters, if specified. These goggles protect the wearer's eyes from splashes, spray, dust, and other particles.

For more data circle **31** on Reader Service Card

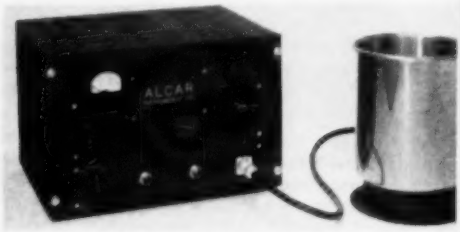
★ ★ ★

Ultrasonic Mixer-Cleaner

Development of an ultrasonic mixer-cleaner designed to perform difficult cleaning or mixing jobs on a production or laboratory basis has been announced by Alcar Instruments, Inc., Little Ferry, N. J.

Consisting of a one-gallon capacity transducer driven by an ultrasonic generator, the Alcar Mixer-Cleaner, Model 1115, is particularly useful for such applications as cleaning, degreasing, and mixing of liquids.

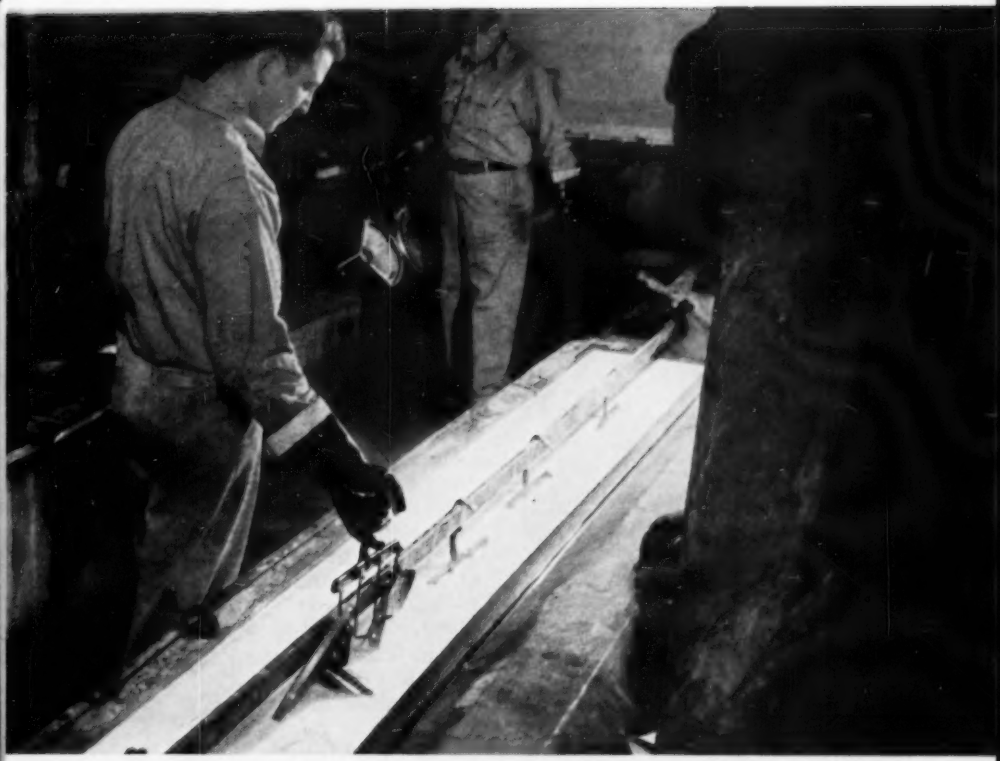
The transducer, in resonance with the generator at one megacycle, activates cleaning medium ultrasonically and cleans parts such as vacuum tube grids, meters and meter movements,



Ultrasonic Mixer-Cleaner

printed and soldered circuits, automotive and motor parts and tools. As a mixer, the unit aids operations such as agglomeration, deglomeration, emulsification, and polymerization.

For more data circle **32** on Reader Service Card



t mechanism part for tractor takes cadmium finish smoothly after cleaning in caustic solution.

HIGHER POWER ALKALINITY AT LOWEST COST

Get Dow caustic flake for economical, thorough stripping

Anhydrous caustic flake direct from Dow . . . low cost, effective metal cleaning. These free-flowing, uniform flakes give users the very maximum in alkaline stripping power.

Full *supply* of this unmatched caustic flake is assured through Dow's multi-plant production: Midland, Michigan; Freeport, Texas; Pittsburg, California. Dependably prompt *delivery* is as certain, with Dow's extensive distribution network of terminals and regional stock points.

When a better stripping job at lowest cost can be yours for the asking . . . it's good sense to ask for Dow caustic flake *today*. THE DOW CHEMICAL COMPANY, Dept. AL 753K, Midland, Michigan.

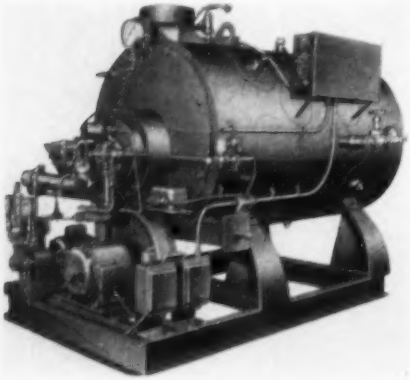
you can depend on DOW CHEMICALS

DOW

Steam Generator

A compact 50 h.p. steam generator designed to burn No. 4 oil has been developed by Cyclotherm Division, National-U. S. Radiator Corporation, Oswego 5, N. Y. The tiny boiler is said to operate at efficiencies of 80 per cent or better.

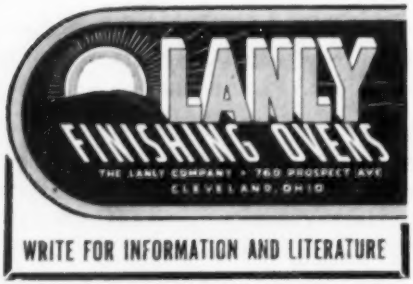
The Cyclotherm can be installed in



Compact Steam Generator

20 square feet of floor area. It requires only 4 feet 8¼ inches of head room. Since no cement foundation is necessary to install this boiler, it can be installed anywhere that fuel, water and electricity are available.

For more data circle **33** on Reader Service Card

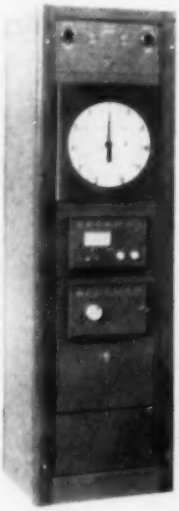


For more data circle **211** on Reader Service Card

pH Control System

The Beckman Division of Beckman Instruments, Inc., has announced the availability of a "packaged" pH control system.

Designed for use in any pH process application, these systems combine in a single package all the components needed for single or multiple-channel pH process monitoring, recording and controlling. The entire system is built at the factory, wired, piped and assembled ready for plug-in installation. The basic components can be assembled into a number of different combinations from the simple combination of pH meter and alarm to the multiple-channel monitor-recorder-alarm-control system.



pH Controller Recorder

For complete information on these pH systems and their applications request Bulletin 384 from Beckman Division, Beckman Instruments, Inc., Fullerton 1, California.

For more data circle **34** on Reader Service Card

★ ★ ★

Colored Aluminum

Aluminum may now be ordered by fabricators in all colors direct from the mill, according to an announcement by the Aluminum Company of America, 769 Alcoa Bldg., Pittsburgh 19, Pa. Alcoa will offer a complete line of color anodized aluminum.

Blue, green, yellow, gray, brown,

WHAT KILLS YOUR PUMPS?

CORROSION...ABRASION...VIBRATION?

Heavy rubber or special linings molded in the case to resist corrosion and abrasion

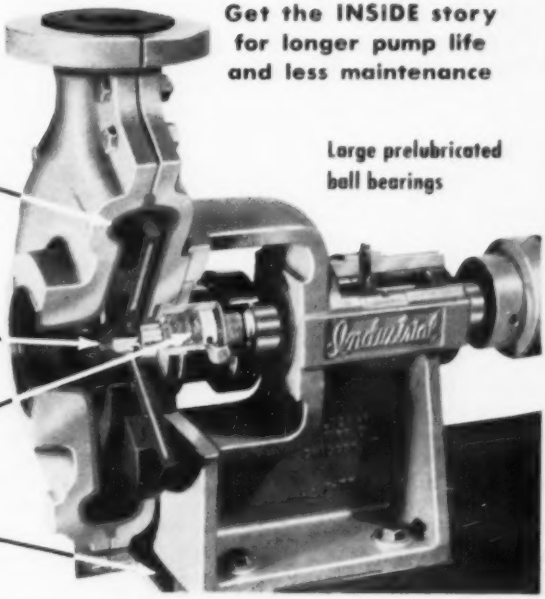
Get the INSIDE story for longer pump life and less maintenance

Large prelubricated ball bearings

One-piece molded impeller and oversized shaft prevent oscillation

Easy access to corrosion-proof stuffing box

Rubber covered base

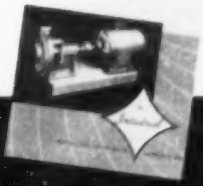


Industrial RESISTS ALL 3

Lined to suit the job . . . with the exact rubber formula most resistant to your processes fluids in INDUSTRIAL'S own rubber compounding and lining division. Also lined with Neoprene, Saran, Hypalon or Hycar. Many sizes up to 450 gpm.

Write for 8-page bulletin with head, GPM and efficiency graphs.

CENTRIFUGAL PUMPS



Industrial

INDUSTRIAL

FILTER & PUMP MFG. CO.

5904 OGDEN AVENUE • CHICAGO 50, ILLINOIS

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Table I

Forming Characteristics		Resistance to Weathering	Resistance to Wear	Remarks
B2-	Fair	Cleaning should be maintained. Not as good as C5- or F2-.	Not as good as C5- or F2-, except in light usage.	Designed for indoor use; not recommended for long outdoor use.
C5-	Good	Cleaning should be maintained. Not as good as F2-.	Not as good as F2-, except in moderate usage.	Designed for indoor use, but can be used outdoors under carefully selected conditions.
F2-	Poor	Good	Good	Designed for outdoor use with occasional cleaning; not recommended as a substitute for Alcoa Architectural Colored Finishes for Exterior Use.

gold and black metallic finishes can now be ordered on sheet, extruded shapes, rod, bar and on drawn and extruded tube. Shade variations of the standard colors are also available.

The colored aluminum products can be supplied for both indoor and outdoor use. Two general classes of color anodized finish are involved. These are Alcoa Decorative Color Finish and Alcoa Architectural Color Finish.

The decorative color finishes are designed for interior and exterior application; architectural finishes are designed for exterior service. Both classes, architectural and decorative, are supplied in extruded forms and in flat sheet, including pattern sheet. The decorative finishes are also supplied in coiled sheet.

The Alcoa Decorative Color Finishes are available in red, blue, green, gold and natural aluminum. Other colors and shade variations of the standard colors are available subject to special inquiry. The decorative color finishes are offered not only in different colors, but also in a number of different types designated by symbols. These types fall into three main categories each having different characteristics. The main categories and their characteristics are outlined in Table I.

In each category shown, various surface preparations are available.

For more data circle **35** on Reader Service Card

★ ★ ★

APPLYING PHOSPHATE COATINGS TO STEEL. A booklet entitled, "How to Apply Zinc Phosphate Coatings to Steel in Preparation for Painting," may be obtained from **Oakite Products, Inc.**, 120 Rector Street, New York 6, N. Y., by writing on company letterhead.

The booklet describes the zinc phosphating materials used in the Oakite CrysCoat Process to give paint-anchoring, corrosion-resisting coatings.

The booklet illustrates and explains the action of the Oakite CrysCoat Process in converting the steel surface into a complex, phosphate layer chemically bound to the metal, and shows how this coating improves paint adhesion and prevents the spread of corrosion under the paint. Common uses, solution strengths, and temperatures of the various Oakite CrysCoat zinc phosphating materials for spray washing, tank immersion, and final rinsing are described. The booklet also outlines the control procedure required by this process.

• Zig-Zag conveyor moving card handling equipment from infra-red ovens to floor level at Wright Line, Inc., Worcester, Mass. Note how much more floor space is saved, when products move overhead.

Production moves with

R-W Zig-Zag® Continuous Power Conveyors

R-W Continuous Power Conveyors break bottlenecks . . . products move swiftly, safely, *continuously* on the production line, and in between departments.

R-W Continuous Power Conveyors operate overhead . . . out of the way. Save valuable floor space, help eliminate cramped working conditions.

R-W Continuous Power Conveyors are versatile, flexible . . . move up, down, in, out and around, "like water through a pipe." Six-inch pendant centers handle any load a man can lift. Choice of drive units permits travel at any required speed with variations of 10 to 1 or better.

R-W Continuous Power Conveyors can be easily altered . . . by plant personnel to meet changing conditions.

Richards-Wilcox Mfg. Co.
MATERIALS HANDLING DIVISION
Branches in Principal Cities
276 W. THIRD STREET, AURORA, ILLINOIS

Use RICHARDS-WILCOX
INDUSTRIAL & FIRE DOORS
DOOR HARDWARE
ELECTRIC OPERATORS
"Made for each other"

For more data circle 213 on Reader Service Card

News of the Industry

NEW PLANTS

Allied Research Products, Inc., Baltimore manufacturer of the Iridite line of chromate conversion finishes and ARP process chemicals, has completed a plant expansion that doubles the area available for research and development. The new quarters are an addition to the Baltimore plant.

The first floor of the new wing is devoted to research and development. The second floor is devoted to administrative, sales and general offices.

★ ★ ★

The growth of chemical research at **Battelle Memorial Institute,** Columbus, Ohio, has been marked by the completion of a new chemistry building. According to Dr. E. E. McSweeney, manager of the department of chemistry, seven of the nine divisions of the department, and one of the Institute's chemical engineering divisions, are housed in the new space, which totals 98,000 square feet.

The new building, which makes about 50 per cent more laboratory space available for chemical research, will afford room for continued growth.

Special features include constant-temperature-humidity rooms, and an explosion-proof area for polymerization studies on combustible materials.

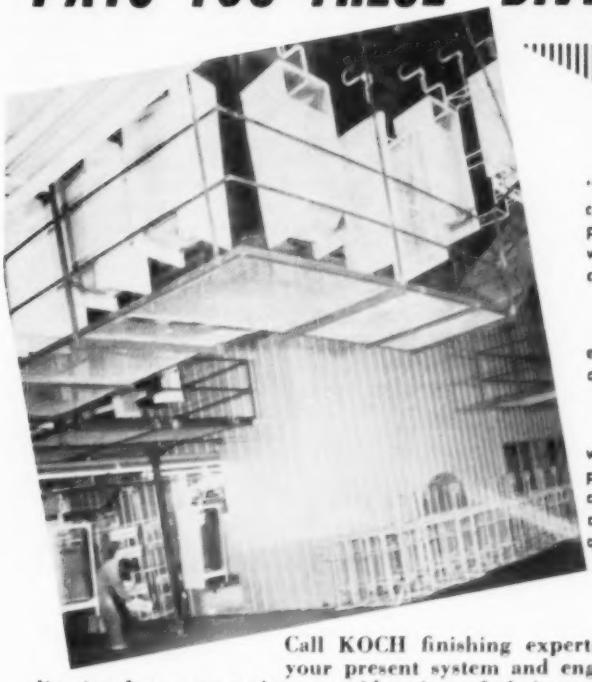
★ ★ ★

A **General Electric Company** plant costing in excess of $5,000,000 will be built at Lynchburg, Va., as the new home for the company's Rectifier Department, now located at Lynn, Mass-

Recent addition to the Columbus, Ohio, laboratory facilities of Battelle Memorial Institute.

ONE RESPONSIBILITY FOR YOUR COMPLETE FINISHING SYSTEM

PAYS YOU THESE "DIVIDENDS"...



Assurance of perfect "dove-tailing" of all component engineering, preventing costly re-working and last-minute changes.

Freeing your plant engineering department of coordination details.

Contract placement with firm of long experience, insuring best and latest equipment and engineering technique.

Call KOCH finishing experts now for appraisal of your present system and engineering layout. No obligation but your serious consideration of their recommendations.

KOCH ENGINEERS, BUILDS and INSTALLS

● Complete Organic Finishing Systems ● Industrial Air Conditioning Systems
● Dust, Fume Removal and Air Replacement Systems

WRITE FOR BROCHURE No. 12F-J7

GEORGE KOCH SONS, INC.
EVANSVILLE, INDIANA

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achusetts and at Limerick, Maine.

Max I. Alimansky, general manager of the department, has announced that grading of the plant site will begin in November, and actual construction of the plant will start in March, 1956. Initial production is scheduled for January, 1957.

★ ★ ★

The formation of a new division to market thinners for dip, spray, flow-coating, or any thinner application, has been announced by the **Ell-Bee Chemical Company, Inc.,** Hanover, N. J.

Specialists in thinners for leather,

Ell-Bee Chemical Co., Inc., has new facilities for producing solvents and paint thinners.

metal etching and polystyrene plastics, the Ell-Bee Chemical Company can produce any synthetic reducer or retarder to the customer's specification.

★ ★ ★

Plans for a new engineering facility have been announced by Board Chairman Robert A. Weaver of the **Ferro Corporation.**

Located adjacent to Ferro headquarters at 4150 East 56th St., Cleveland, Ohio, the two-story structure will house the Ferro Engineering Division and the Allied Engineering Division.

★ ★ ★

The George L. Nankervis Co., Detroit, Mich., has announced the purchase of a 72,000 square foot manufacturing plant formerly occupied by the Nash Division of the American Motors Corporation. It is located on a five acre plot at Fullerton and Whitcomb, Detroit, Michigan.

George L. Nankervis, president, has also announced that plans are being readied for a 12,000 square foot addition to the plant for executive and general offices and an engineering drafting room. Extensive plant changes are also contemplated.

COMPANIES

At the annual technical sales conference held by **Oakite Products, Inc.,** representatives from the company's New York, Canadian, Philadelphia, and New England divisions shared their experiences in serving the cleaning needs of the metal, food, petroleum, automotive, marine, textile, paper, railroad, and other industries.

One of the features of the conference was a discussion of 18 new cleaning, sanitizing, and metal treating materials; improvements in the Oakite CrysCoat Process of phosphating; and improved mechanized cleaning methods developed by the company during the past two years.

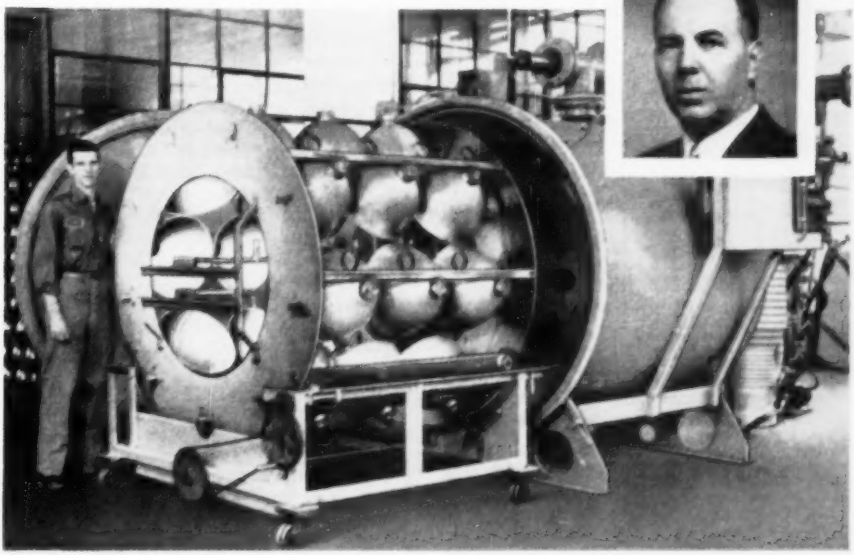
Oakite Products Annual Technical Sales Conference

"Our Reflector Finishing Costs Dropped from $4.00 each to 95¢ each

WHEN WE CHANGED FROM ELECTRO-PLATING TO VACUUM COATING"

states

Mr. Elwood C. Rogers
President
Elwood Pattern Works, Inc.
125 N. East Street
Indianapolis, Indiana



NRC "Rapid Cycle" Vacuum Coater used to produce a new lower cost, higher quality finish on enlarger reflectors by Elwood Pattern Works, Inc., one of the country's leading photo enlarger manufacturers

Other comments made by Mr. Rogers about the benefits resulting from his NRC "Rapid Cycle" Vacuum Coater:

"Customers are enthusiastic" . . .

". . . has eliminated all our troubles".

". . . gave us a reflector that would not tarnish or be affected by the heat".

"Our figures show this unit repays its total initial cost in less than 5 months".

You'll find NRC Vacuum Coaters have other important production advantages. They are easier to load . . . safeguarded from operator errors . . . faster to operate . . . less costly to maintain.

We have had years of experience in making and operating vacuum coaters. We can help you on all the problems involved in setting up a vacuum coating production unit — the size of the coater, method of loading, selection of lacquers, type of coating, and many others.

Get all the facts on the lower costs, improved quality possible with vacuum coating. Send coupon below.

SALES OFFICES IN PRINCIPAL CITIES

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Subsidiary of National Research Corporation
Dept. 231, Charlemont St., Newton Highlands 61, Mass.
Please send me the "Rapid Cycle" Vacuum Coater Bulletin

Name _____ Title _____
Company _____
Address _____
City _____ State _____

For more data circle 215 on Reader Service Card

Henry M. Kidd, DeVilbiss Company vice president in charge of spray painting equipment sales, has announced a series of sales conferences for DeVilbiss sales representatives.

The sales conferences, Mr. Kidd said, are to be held at regular intervals enabling each representative to spend one week at the main plant at least every two years.

The present program for the sales conferences will include comprehensive sessions in exhaust systems, automatic spray painting machines, the paint heater, catalyst gun and the spray application of buffing and drawing compounds. New equipment which is almost ready to be put into production will be shown and demonstrated.

★ ★ ★

A preview of things to come from **The DeVilbiss Company,** Toledo, Ohio, manufacturer of spray painting and allied equipment, brought together DeVilbiss west coast and east coast divisional sales managers. The two men in Toledo recently for the company's national sales meetings were Carl B. Gracely, east coast divisional sales manager, from Newark, N. J.; and J. W. Dayton, west coast divisional sales manager from Santa Clara, Calif. Harold C. Fornwall, DeVilbiss equipment analysis engineer, described the new portable paint heater, which will be marketed soon.

Harold C. Fornwall (right), DeVilbiss equipment analysis engineer, describes new portable paint heater to DeVilbiss divisional sales managers Carl B. Gracely and J. W. Dayton

★ ★ ★

A recent trip to Fiat enterprises, Turin, Italy, by **J. F. McCaslin,** in charge of the **DeVilbiss Company** customer research laboratories, showed that interest in better finishing methods is world wide. Mr. McCaslin surveyed the finishing facilities at Fiat and instituted a perpetual training program for spray operators. He also visited plants in England and Scotland to give technical advice for the improvement of finishing methods.

The finishing departments in the plants visited by Mr. McCaslin are similar to facilities found in the United States. The Fiat plant impressed him with its cleanliness. Inspections along production lines are critical in an effort to produce a superior product.

In one of the plants, Mr. McCaslin noted that the finishes being achieved with synthetic enamel were the finest he has ever seen in a production setup during his 21 years as a DeVilbiss technician.

He reported that in England he found one big automotive plant which has made surprising strides toward automation of its finishing facilities, with the installation of automatic spray painting machines for the finishing of automobile bodies.

The use of multiple colors which dominates U. S. automotive production is not as pronounced in European and English production. The colors used for automobiles are more conservative.

★ ★ ★

At the annual meeting of the board of directors of **Magnuson Products Corporation** the following officers have been elected: president, **Ingrid C. Magnuson**; executive vice president and

secretary, **Russell F. Burch**; treasurer, **Charles L. Novak**; assistant secretaries, **William F. Nickerson** and **Edward Magnuson, Jr.** The corporation, founded by the late Edward Magnuson, is in its thirty-third year of operation in the cleaning compound field.

★ ★ ★

The Canadian affiliate of Norton Company, **Behr-Manning (Canada) Limited,** Brantford, Ontario, has celebrated its twenty-fifth anniversary. Incorporated first as Canadian Durex Abrasives, Ltd., the plant is a valuable source of supply to Canadian industry for abrasive coated products.

★ ★ ★

With individual records ranging from one to four decades, 353 employees of **Diamond Alkali Company's** Painesville, Ohio Works have been cited for long service.

Seven-way handshake of congratulations is exchanged by (left) John A. Sargent, president of Diamond Alkali Company, and six 40-year employees. Appearing clockwise are: Nicholas Zavore, F. C. Quick, John Braski, S. L. Andrews, Camillo Evangelista, Hugo Torre.

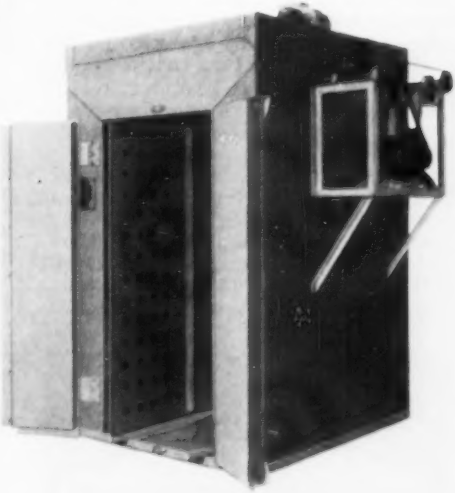
The company awarded diamond-shaped pins to 353 men and women, whose combined service with Diamond totals 6,425 man-years—a record compiled in less than half a century.

OVENS

for More Uniform—
Faster Drying

- Recirculation Heating
- Electric • Gas • Oil • Steam
- Batch or Conveyor Types
- Safety Control Features
- Save Space and Time
- Reduce Operating Cost

Write for Catalogs



W. S. Rockwell Company • 2906 Eliot St., Fairfield, Conn.

For more data circle **216** on Reader Service Card

In a move to provide improved service for expanding markets in the Southeast, **The Dow Chemical Company** has located its area sales office in the new Fulton National Bank Building (1714) in Atlanta.

The Atlanta office, founded in 1950, serves markets in Georgia, Alabama, Florida, North Carolina and South Carolina. Its manager is **Leroy C. Stewart**, a veteran of 37 years with Dow.

★ ★ ★

Maas & Waldstein Company, Newark, N. J., Chicago and Los Angeles, was selected as the representative company of the paint, varnish and lacquer industry to participate in the most recent Value Analysis Seminar sponsored by the **General Electric Company**. The Seminar, held at the Thomson Club, Nahant, Massachusetts, was attended by approximately 125 Value Analysis supervisors.

Among the many coatings displayed and discussed by Maas & Waldstein Co. as having value for use on parts manufactured by GE were Plextone multi-colored textured enamel; Hammertone and Duart wrinkle enamels; Coprene rubber based enamels; Durachem chemical resistant coatings, and Water Dip No. 33.

★ ★ ★

Samuel J. Miller, chemical director of **The DuBois Co., Inc.**, will supervise an industrial cleaning and processing problem clinic during the 7th National Plant Engineering and Maintenance Show in Philadelphia's Convention Hall, January 23-26, at booth 1430.

Polio Patients Need Help!

Join the

MARCH OF DIMES

January 3 to 31

Mr. Miller, **Thomas Dierker**, industrial manager, and other top DuBois personnel will display and discuss cleaning and processing methods, equipment, and products. These will include the most recent developments in continuous stripping methods and new phosphatizers for use on ferrous metals, aluminum, and zinc.

★ ★ ★

The **Esbec Barrel Finishing Corporation** of Byram, Connecticut, has announced the appointment of **E. W. Denny**, Denn-Burr Process Company, 8833 Philbin St., Arlington, Calif., as sales representative in southern California.

Mr. Denny, formerly a development engineer for General Electric Company, has put in local stocks in Esbec Color Identified Barrel Finishing Compounds so as to give southern California industry good service.

★ ★ ★

Formal consolidation of **Niagara Alkali Co.** of Niagara Falls, N. Y., into **Hooker Electrochemical Co.**, also of Niagara Falls, has been effected. This action followed a vote by stockholders of both companies.

Following the first meeting of the consolidated board of directors, R. Lindley Murray, board chairman, announced that **J. Clark Cassidy**, formerly president of Niagara Alkali, has been elected a vice president and director of Hooker.

Niagara Alkali will be operated as the Niagara Alkali Division of Hooker Electrochemical.

★ ★ ★

Schmieg Industries, Inc., has announced the opening of an eastern office located at 119 West 57th Street, New York 19, N. Y. **Alfred W. Smart** serves as district manager.

★ ★ ★

The establishment of two sales offices, at Detroit and Minneapolis, by the Synthetics Department of **Hercules Powder Company**, has been announced. It was also announced that

the department's Houston office has been made a district sales office.

The Detroit office will be in the Fisher Building, and **Eugene S. Massey** has been named resident representative.

The Minneapolis office will be in Suite 587, Northwestern Bank Building, 620 Marquette Avenue. It has been designated as a suboffice under the Chicago district, and **Bruce J. Hall** has been named resident technical representative.

The Houston office is now a department sales district office, with **Henry J. Heiser** as district manager.

★ ★ ★

Pennsylvania Salt Manufacturing Company has announced plans to enter the aerosol propellant and refrigerant fields late in 1956 with the Isotron line . . . a complete family of chlorofluorohydrocarbons. (Initial products will include trichloromonofluoromethane, dichlorodifluoromethane, and monochlorodifluoromethane. Early additions to the line will be trichlorofluoroethane and dichlorotetrafluoroethane.) This expansion is part of Pennsalt's long-range plans for consolidating its established position in the fluorine chemicals industry and to achieve further diversification.

The new Isotron line will be produced in a multi-million dollar plant already under construction at Calvert City, Kentucky.

★ ★ ★

Barrows Porcelain Enamel Co., Cincinnati, Ohio, has been purchased by **Robert H. Stegeman,** Cincinnati, Ohio.

The firm, established in 1933, is a producer of porcelain enamel sign faces and letters, architectural components, and industrial products.

W. A. Barrows, founder and president, is retiring from active management in the company, but will continue in an active advisory capacity.

★ ★ ★

Appointment of three sales representatives for Tipp "Cable-Way" conveyors has been announced by R. E. Britt, president, **Tipp Manufacturing Company,** Tipp City, Ohio.

The Alfred B. King Company, Devine St., North Haven, Conn., will cover Connecticut and western Massachusetts. **Elmer A. Skonberg** of the **Machinery Sales Company,** 1705 Clayton Rd., Louisville, Ky., will cover Kentucky and southern Indiana. **H. M. Sawrie and Company,** Professional Building, Chattanooga, Tenn., will cover Tennessee, Alabama and Georgia.

★ ★ ★

A new Finishing Methods Service has been announced by the **Atlantic Compound Co.,** 1860 Baldwin St., Waterbury, Conn. This service will furnish guidance and give recommendations for finishing specific parts. Information will include the buff, compound and wheel speed recommended to secure the type finish required.

The Atlantic Compound Co. offers this service on polishing and buffing problems for articles forged, drawn, turned, cast, stamped or formed.

★ ★ ★

A program of technical assistance through product information and consultation to provide industry with advice on systems for cleaning metal parts has been announced by **Circo Equipment Co.,** Clark Township (Rahway), N. J.

This program is designed to further knowledge of the operation of vapor and ultrasonic degreasers. Melville Morris, Circo president, indicated that his company's experience in the manufacture of degreasers, metal parts washers, dryers and solvent recovery stills will be at the disposal of production engineers through technical case history reports, new product literature, clinic meetings, application recommendations and trade articles.

Published material giving detailed information about Circo's line, and technical papers on ultrasonic degreasing equipment have been prepared and are available from Circo Equipment Co., 128 Central Ave., Clark Township (Rahway), N. J.

Pittsburgh Plate Glass Company has established a new wholly-owned subsidiary to be known as the **Pittsburgh Plate Glass Export Corporation,** according to an announcement by Harry B. Higgins, president.

Purpose of the subsidiary is to handle all phases of the export business of Pittsburgh Plate Glass Company within the western hemisphere.

President of the new subsidiary is **John H. Henshaw,** who will continue to serve as general export manager of Pittsburgh Plate Glass Company.

NEW POSITIONS

Promotion of **J. Stanley Hall** to sales director of the chemical specialties division of the **Pennsylvania Salt Manufacturing Co.** has been announced. In this newly created position, Mr. Hall will be responsible for the national sales activities of the metal processing chemicals, B-K food sanitizing products, corrosion engineering, household products, and laundry and dry cleaning chemicals.

★ ★ ★

Robert A. Emmett, Jr.

Robert A. Emmett, Jr., has been elected vice president of the **Detrex Corporation,** Detroit.

A. O. Thalacker, president, states that Mr. Emmett will continue in charge of the industrial equipment division at the Woodrow Wilson plant as well as dry-cleaning production at the new Detrex plant in Bowling Green, Ky.

★ ★ ★

Dr. Mark W. Westgate, formerly chief chemist, technical division, National Paint, Varnish, and Lacquer Association, has joined the staff of **Gardner Laboratory, Inc.,** Bethesda, Md. He has contributed to numerous publications on topics of interest to the coatings industry, including evaluation of raw materials, fire retardent paints, and development of physical and chemical testing apparatus and methods.

★ ★ ★

New assignments in the Synthetics Department Sales Division of **Hercules Powder Company** have been announced by James W. L. Monkman, the department director of sales. The new assignments are: **John F. Copeland,** field sales manager; **George E. Osburn,** sales manager, Wilmington district; **John S. Autenrieth,** industry sales manager, covering the adhesives, printing ink, petroleum, and plastics industries; **J. G. Little,** industry sales manager, covering paint, varnish, lacquer, and other industries; **Henry D. Heiser,** sales manager, Houston district; **B. J. Dougherty,** sales manager, St. Louis district; and **Cliff S. Skow,** resident technical representative, Los Angeles district.

★ ★ ★

Richard C. Campbell

Richard C. Campbell has joined **Metal & Thermit Corp.,** New York, producers of metals, industrial chemicals, welding equipment and supplies, as metallurgical sales engineer. In his new post he will be assistant to C. R. Schroder, manager of the company's Metals Department.

Mr. Campbell was previously connected with the Watson-Flagg Machine Co., Paterson, N. J., as sales and metallurgical engineer.

John W. Thomson has been appointed manager of the **Pittsburgh Plate Glass Company**, Akron, Ohio, distributing branch. Mr. Thompson succeeds Edward Libal who has resigned after 44 years with Pittsburgh Plate Glass.

Formerly, Mr. Thomson was assistant manager of Pittsburgh Plate's Chicago, Illinois, distributing branch.

★ ★ ★

Jack C. Thomas

Jack C. Thomas has been appointed district representative for northern Ohio by **The W. W. Sly Manufacturing Co.**, Cleveland, designer and manufacturer of dust control systems, blast cleaning equipment, tumbling mills and industrial ovens. Mr. Thomas has headquarters in Cleveland.

Prior to the appointment, Mr. Thomas worked in the Sly sales department.

★ ★ ★

The advancement of **Floyd J. Gunn** to manager of **The Dow Chemical Company** Los Angeles office has been announced by Donald Williams, vice president and director of sales. Mr. Gunn has served as manager of Coatings Sales for the Plastics Department for six years.

He succeeds **Homer L. White** who has held the post since 1950 and will now take over an assignment on the company's production control staff in Midland.

★ ★ ★

Thompson and Co., Oakmont, Pa., manufacturer of industrial and technical paints and coatings, has announced the appointment of **M. D. Phelps** as sales manager and **R. G. Henning** as assistant sales manager.

★ ★ ★

John F. Green

Appointment of **John F. Green** as general manager for **Pittsburgh Plate Glass Company Ditzler Color Division** in Detroit, Michigan, has been announced by E. D. Peck, vice president in charge of the paint and brush division.

Prior to his appointment, Mr. Green had served as assistant general manager for the Detroit division which produces finishes for the automotive industry.

Mr. Green succeeds Harold H. Hill who recently was appointed general manager of automotive finishes.

★ ★ ★

David M. Roney, Jr.

Hanson - Van Winkle - Munning Co., Matawan, N. J., has announced the addition of **David M. Roney, Jr.**, to the sales organization as administrative assistant.

Mr. Roney was graduated from the United States Naval Academy with a bachelor of science degree. He attended the University of Pennsylvania Law School for one year prior to joining the Scintilla Division of Bendix Aviation Corporation.

In 1951, Mr. Roney joined Westinghouse Electric as application engineering manager in the Electroplating Projects Department.

Emmett N. Shutts has been appointed assistant general sales manager of **The Hartford Steel Ball Company.** For the past five years, Mr. Shutts has been the New England sales representative. Prior to his association with Hartford Steel Ball, he was a salesman for Connecticut Light and Power Company in Waterbury.

Henry Risko

Emmett N. Shutts

Henry Risko has been appointed sales manager of the Industrial Filtration Division, **U. S. Hoffman Machinery Corporation,** New York, N. Y.

Mr. Risko will be in charge of sales for the Filtration Division, which manufactures flotation units, pre-coat type pressure filters, disc filters, magnetic separators, petroleum solvent stills, suction filters, other equipment.

Prior to his association with U. S. Hoffman, Mr. Risko fought professionally as a boxer under the name of "Babe" Risko. In 1936, "Babe" won the world's championship middleweight title and defended it successfully until 1938. During his ring career, Mr. Risko fought in 114 bouts against such ring notables as Billy Conn, Ezzard Charles, and many others.

Mr. Risko, although retired from the contender ranks, is still active on the East Coast as a boxing referee.

★ ★ ★

Four appointments in the technical department of the Paint Division for **Pittsburgh Plate Glass Company** have been announced by Dr. W. W. Bauer, technical director, Paint Division.

Rolland I. Peters, formerly technical director of Ditzler Color Division in Detroit, Michigan, since 1948, has been appointed technical coordinator of automotive finishes for the Paint Division, with headquarters in Detroit.

Harold W. Redshaw, Ditzler assistant technical director for the past seven years, succeeds Mr. Peters as technical director.

William E. Sanford, who had served as technical director of the Atlanta, Georgia, Paint Division since 1952, has been appointed assistant supervisor of trade sales development for Milwaukee, Wisconsin, Paint Division.

Robert P. Ericson, resin chemist at Newark Division since 1946, succeeds Mr. Sanford as technical director.

★ ★ ★

Ford Ballantyne, Jr., vice president and general manager of **The J. B. Ford Division of Wyandotte Chemicals,** has been elected to the board of directors. Mr. Ballantyne joined the Wyandotte Chemicals production staff in 1942, was elected a vice-president in 1950, and became general manager of the Ford Division in 1953.

Ford Ballantyne, Jr.

Bert Cremers, vice president and general manager of the **Michigan Alkali Division of Wyandotte Chemicals,** was also elected to the Wyandotte board of directors.

★ ★ ★

Atlas Powder Company has basically realigned the chemical research and development organization and staff to

strengthen long-range research and product diversification programs, it has been announced by Edward J. Goett, vice president in charge of the Chemicals Division.

As part of the program, product development work on activated carbons will be transferred from the Darco Experimental Laboratory in Marshall, Texas, to Wilmington, Del.

Joining the Atlas staff to direct the Chemical Research Department phase of the work is **Dr. Walter H. C. Rueggeberg,** formerly director of organic research and development for Tennessee Corporation.

Assistant directors of the reorganized research staff, as announced by Mr. Goett, include: Chemical Research Department—**Dr. Robert S. Rose, Jr., Dr. John D. Brandner** and **Dr. John W. Le Maistre.** Chemical Engineering Department—**Dr. J. Neal Addoms.** Product Development Department — **William C. Griffin** and **Dr. George O. Rudkin, Jr.**

★ ★ ★

Clinton F. Ivins, Jr.

Clinton F. Ivins, Jr. has been appointed assistant manager of electrical sales at **Hanson-Van Winkle-Munning Co.,** Matawan, N. J. Mr. Ivins will be particularly concerned with the marketing of low voltage rectifiers and will have general responsibilities in the entire electrical sales program, under electrical sales manager P. Ross Lyons.

Prior to joining H-VW-M, Mr. Ivins was associated with the Keuffel & Esser Co. as an assistant to the vice president.

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Harold A. Pollay has been appointed chief chemist of **The Chemical Coatings Corporation,** Rocky Hill, Conn.

International Rustproof Corporation, Cleveland manufacturer of rust preventives and corrosion solvents has announced the appointment of **L. D. Barrett** as director of research. Mr. Barrett holds degrees from both Case Institute of Technology and John Carroll University. He was formerly associated with the Weatherhead Company as chief chemist.

L. D. Barrett

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Edward P. Sadowski has joined the Development and Research Division of **The International Nickel Company, Inc.,** as a research metallurgist in the Iron Alloys Section of the Research Laboratory at Bayonne, N. J., according to an announcement by Dr. W. A. Wesley, manager of the laboratory.

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Dr. Karl Schumpelt has been appointed chief metallurgist for **Sel-Rex Precious Metals, Inc.,** Belleville, New Jersey, Edwin C. Rinker, vice president and technical director has announced.

Dr. Karl Schumpelt

Well known in the precious metals field for his work with rhodium electroplating techniques, and for his contributions to electrochemistry of the platinum metals in general, Dr. Schumpelt held the posi-

tion of chief electrochemist with Baker & Co., Inc., for 23 years and with the Forstner Chain Corporation for 5 years.

Dr. Schumpelt will devote most of his time to research and development at the Belleville plant of Sel-Rex where a fully equipped metallurgical laboratory has been set up for his use.

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H. H. Butts has been appointed sales engineer for the **International Rustproof Corporation** in the Chicago area, W. N. Murton, vice president of the company has announced.

Harold J. Coleman

H. H. Butts

The appointment of **Harold J. Coleman** as sales manager of **Chandeysson Electric Company** has been announced by James F. Carland, executive vice president. Before joining Chandeysson, Mr. Coleman was district manager for Essex Wire Corporation.

In his new position, Mr. Coleman will supervise sales of Chandeysson motor generators to the metalworking, graphic arts and aircraft industries.

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Pittsburgh Plate Glass Company has appointed **Albert Bauzenberger, Jr.**, assistant manager of industrial sales for the Philadelphia district, according to Howard J. Mather, general manager, industrial finishes sales, for the Paint Division.

Herbert Brown and **Richard S. Keen** have joined Wyandotte Chemicals' service staff in New York City and Detroit, respectively.

Mr. Brown has had sales-service experience since 1951 contacting the metal finishing industry in eastern United States.

Herbert Brown

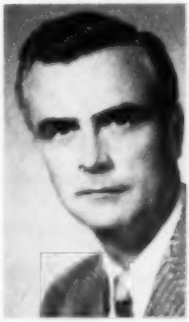
Richard S. Keen

Mr. Keen has been connected with the laboratory testing of plated coatings for Ford Motor for a number of years.

★ ★ ★

Robert N. Lynch has been appointed general sales manager of **Park Chemical Company**, Detroit Michigan.

In the sales department since 1940, Mr. Lynch was made Industrial Division sales manager in 1949.



Robert N. Lynch

Charles R. Foreman has been promoted to head of sales in the Industrial Division. **James L. Hagen** has been named manager of the Special Products Division.

George Kastner has joined the staff of **MacDermid, Incorporated,** Waterbury, Connecticut. Mr. Kastner, formerly chief engineer of Vickers, Inc., will specialize in the promotion and servicing of all mechanical equipment handled by MacDermid, Inc. He will also be in charge of MacDermid's advertising, sales promotion and other details of a similar nature.

Kenneth P. Bellinger

George Kastner

Kenneth P. Bellinger has resigned as executive vice president of the Chemical Corporation, Springfield, Mass., to form his own company, **Conversion Chemical Corporation,** Rockville, Connecticut. The new organization will specialize in specialty cleaners and treatments for the metal finishing industry. The company will also represent a number of well-known manufacturers in the metal finishing equipment field.

★ ★ ★

Howard C. Jones has been appointed director of manufacturing, **Consolidated Vacuum Division, Consolidated Electrodynamics Corporation.**

Mr. Jones will direct all manufacturing phases of the Consolidated Vacuum line of high-vacuum equipment, including high vacuum pumps, gages, and processing equipment for the electronics, metals, distillation, and finishing industries.

Metal & Thermit Corporation, New York City, producer of metals, industrial chemicals, welding equipment and supplies, has announced the appointment of three chemical engineers.

Leonard L. Adler

Leonard L. Adler has been named senior development engineer at the East Chicago, Indiana, plant.

Richard W. Davis will be located at the Metal & Thermit Research Laboratory, Rahway, N. J., as chief development engineer.

Alvin S. Pollock joins Metal & Thermit as process engineer at Carteret, N. J. He attended Carnegie Institute of Technology and Renssalear Polytechnic Institute.

Alvin S. Pollock

Richard W. Davis

★ ★ ★

Branch M. McNeely, Jr., has joined the Development and Research Division of **The International Nickel Company, Inc.,** as a member of the Texas Technical Field Section with headquarters at Houston, according to an announcement by Donald J. Reese, assistant manager of the division.

Dr. Wingate A. Lambertson, formerly assistant director and professor of silicate chemistry of the Institute of Silicate Research for the University of Toledo, has been appointed assistant to the manager, Research Branch of the Research and Development Division of **The Carborundum Company,** according to an announcement by Harry C. Martin, vice president in charge of the division.

Dr. Lambertson will be responsible for expediting the flow of information on Carborundum laboratory developments to potential customers.

★ ★ ★

Robert James Amis has been appointed metal finishing sales engineer for **Frederic B. Stevens, Inc.,** by Frank Watt, general sales manager. He will cover the eastern section of Detroit and eastern Michigan as far north as Port Huron. Prior to being named sales engineer, Mr. Amis had served Stevens as chief draftsman and service engineer in the Metal Finishing Division.

Robert J. Amis

John R. Heizmann

John R. Heizmann has been appointed metal finishing sales engineer for **Frederic B. Stevens, Inc.,** Detroit 16, Michigan. His territory will be a portion of Detroit.

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David L. Yabroff has been named manager of the market development department of **Shell Chemical Corporation** in New York.

For the past two years he has been director of the agricultural research division of Shell Development Company in Denver.

He joined Shell Development Company in 1934 as a research chemist at the Emeryville Research Center in California.

SOCIETIES

Dr. C. Fred Gurnham

National Technical Task Committee on Industrial Wastes. Report of the Electroplating Industry to Task Group III, December 1, 1955. The electroplating industry reports continuing progress toward pollution abatement during 1955. The literature on plating wastes contains an increased number of accounts of construction and operation of full-scale treatment plants.

Analytical Methods. The analysis of electroplating wastes is reasonably well covered in the 10th edition of "Standard Methods for the Examination of Water, Sewage, and Industrial Wastes," issued during 1955. Any dissatisfaction with this book and suggestions for improvement should be reported where they will do some good. There is, for example, in the Federation of Sewage and Industrial Wastes Associations, a Committee on Standard Methods, with subcommittees on cyanides and metals as well as on other specific analyses.

Additional journal articles on analytical methods have appeared during 1955, by Serfass (Lehigh University), and Shaw (University of Texas).

Treatment Methods. The treatment methods developed during recent years remain popular. There is increasing attention to waste reduction by materials salvage operations and good

housekeeping in the factory. Chlorination is the most common method of destroying waste cyanides.

Applications of ion exchange are increasing, principally because this technique abates pollution by recovery of useful materials. Evaporation is being used to concentrate chromate wastes in several plants, and was reported during 1955 for the concentration and recovery of zinc cyanide liquors.

Research. The principal sponsored research on plating wastes is that of the American Electroplaters' Society. Currently, attention is being given to the kinetics of cyanide oxidation by ozone. This work is being conducted at Yale University under the direction of Professor B. F. Dodge.

Destruction of cyanide wastes by bacterial action has been investigated in England, and a summary report was presented at the 1955 Purdue Conference. Related experiments, sponsored by the National Institute of Health, are now being conducted at Michigan State University.

The toxic effects of plating room wastes in streams, in water supplies, and in sewage treatment plants, are being investigated more intensively than previously. Typical of this research are studies completed or now in progress at the Academy of Natural Sciences of Philadelphia, relating to the synergistic effects of temperature, pH, and hardness on the toxicities of copper, zinc, cyanide, and combinations of these constituents.

New officers of the National Technical Task Committee on Industrial Wastes are: **Dr. C. Fred Gurnham,** chairman; **Frank J. McKee,** vice chairman; **Louis F. Warrick,** secretary.

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Theme for the **Annual Meeting** of the **Detroit Branch, A.E.S.,** held December 2 and 3 was "The Nickel Story."

Prior to the annual technical session, a press conference was held. This was conducted by Herberth E. Head, Chrysler Corp., third vice president of the A.E.S. At the press conference and later in the day at the Annual Meeting, "The Nickel Story," was presented by **Dr. A. Kenneth Graham,** Graham, Crowley & Associates, **Herman B. Director,** Business and Defense Services Administration, and **John Palik, Jr.,** president, National Association of Metal Finishers.

The meeting opened with the showing of a film on the mining of nickel, supplied by The International Nickel Company. Mr. Director presented a talk to show the distribution of available nickel to industry and to the government stockpile. This talk was illustrated by a series of charts.

Dr. Graham spoke on the subject, "Substitutes for Nickel Plating," and, as an introduction to his remarks, commented on the fact that the problem faced by the plating industry in obtaining nickel (even black market nickel) might be lessened materially by a change in the present distribution or allocation of available nickel. Dr. Graham did not recommend that the government stockpiling program be altered or abandoned. He merely expressed his opinion that the plating industry was not receiving an equitable share of the available nickel.

Dr. Graham reviewed suggested substitutes for the conventional nickel-chromium coatings applied for service

Principal figures in the symposium sponsored by the Detroit Branch, A.E.S. Left to right: Dr. A. Kenneth Graham, Herman B. Director, Clyde Kelly, A.E.S. president, Douglas Thomas, librarian of the Detroit Branch, John Palik, Jr., president, N.A.M.F. (Photo courtesy American Electroplaters' Society, Newark N. J.)

in severe outdoor exposure, and distributed charts which evaluated these several coatings. His conclusions were that no satisfactory substitute for nickel plating has yet been developed.

He also pointed out that no company today can get nickel to begin plating if its name is not already listed as an established user. In addition to the difficulty of an established plater in securing enough nickel to do a fraction of current needs, the previously mentioned situation prevents healthy and normal expansion in the industry.

Dr. Graham suggested that one reason for this situation is the fact that nickel users have never presented a sufficiently forceful story to government representatives so that they might obtain an equitable allocation of nickel. Recently, a committee was established headed by Clyde Kelly, president of the American Electroplaters' Society, and John Palik, Jr., president of the National Association of Metal Finishers, to organize and direct a concerted effort toward securing more attention for the plating industry from government agencies.

Mr. Palik spoke briefly about the black market in nickel and the starving of job plating shops with respect to nickel allocation. He presented examples of a number of job plating shops being forced to go out of business because of the lack of nickel.

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Three prominent organizations of the metal finishing and electroplating industry, including the **American Electroplaters' Society**, have formed a joint committee in an attempt to alleviate the present nickel shortage.

Clyde Kelly, president of the American Electroplaters' Society, states, "The American Electroplaters' Society represents all phases of plating and is aware of its responsibility to protect the interests of its members. The shortage of nickel for plating purposes is a matter of great concern to the Society and we shall do all in our power to find ways and means of alleviating this shortage, including the possibility of a 'good housekeeping' program aimed at conservation of nickel at the shop level."

Although the formation of the joint committee has not been completed, principal executive officers have already made important initial steps. This committee to date comprises **Clyde Kelly,** A.E.S. president; **Herman Struckhoff,** president, **Metal Finishing Suppliers' Association**; and **John Palik, Jr.,** president, **National Association of Metal Finishers.**

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Bertram F. Ames, general sales manager of Maas & Waldstein, Newark, N. J., Chicago and Los Angeles manufacturer of lacquers, enamels, and specialty finishes has been appointed chairman of the **Industrial Product Finishes Committee** of the **New York Paint, Varnish & Lacquer Association.**

★ ★ ★

Appointment of **Silvio C. Taormina,** executive secretary, Masters' Electro-Plating Association, New York City, as technical advisor of the **National Association of Metal Finishers** has been announced by John Palik, Jr., National Plating Corp., Cleveland, president of the association.

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F. Paul Ronca, manager of the Silicon Carbide Product Engineering Department of **The Carborundum Company** has been elected chairman of the Technical Committee of the **Abrasive Grain Association.**

MEETINGS

S. P. Gary, Jr., of the Grunwald Hard Chrome Plating Division, president of the **Chicago Branch, American Electroplaters' Society,** has announced that the **44th Annual Educational Session and Banquet** of the branch will be held Saturday, January 28, at the Conrad Hilton Hotel, Chicago.

The branch librarian, Dr. Russell E. Harr of Western Electric Co. has planned an excellent program for the afternoon, headed by R. D. Wysong,

Studebaker-Packard Corporation as moderator.

The following talks will be given:

1. *Engineering Uses of Plated Coatings,* by Phil J. Ritzenthaler, president, Plating Engineering Co., Milwaukee, Wisconsin. This discussion will consider problems encountered in engineering applications of electrodeposits and typical solutions to them.
2. *Decorative Anodizing,* by Joseph M. Andrus, chief chemist, Croname, Inc., Cnicago, Ill.; a discussion of anodizing as a partial solution to the troubles caused by the nickel shortage.
3. *A Progress Report on Accelerated Corrosion Tests for the Performance of Plated Coatings,* by Walter L. Pinner, executive staff engineer, Houdaille Industries, Inc., Detroit, Mich. As chairman of A.E.S. Research Project No. 15, Mr. Pinner will report more recent findings than those presented at the Cleveland convention.

For the evening, banquet chairman R. Scott Modjeska of Scientific Control Laboratories has planned an excellent dinner followed by a floor show and dancing.

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The National Association of Metal Finishers will hold a **Management Seminar** January 27 and 28 at the Conrad Hilton Hotel, Chicago. The program will include five sessions and a banquet on Friday evening at which Representative Sidney Yates (Illinois) will speak as a member of the House Select Committee on Small Business on the current problem of availability of nickel. Other topics will be "Wage Incentives," "Methods of Quality Control in a Job Shop," "Fringe Benefits —1956 Model," and "What the Purchasing Agent Expects of a Plater."

In conference sessions scheduled for both afternoons, there will be an opportunity to discuss problems with guest experts. These are "Business Insurance," "Ventilation in the Job Shop," "Labor Relations," "Flooring Problems," "Executive and Supervisory Bonuses and Distribution Plans," "Office and Shop Forms and Procedures," "Employee Testing," "Taxes," "Sanitary Maintenance," and "Group Insurance."

Attendance is limited to owners and operators of job-shop metal finishing firms and managers of finishing departments.

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The First Educational Session of the Southeastern Branch, American Electroplaters' Society, will be held February 10 and 11 in the Atlanta Biltmore Hotel, Atlanta, Georgia.

Registration will be held February 9 and 10 in the Atlanta Biltmore. Cost is $10.00 per couple.

The program will include a technical session, dinner dance and entertainment for the ladies.

Six prominent speakers will present the technical session, as follows:

1. *Interesting Applications of Decorative Chromium Plating,* by George E. Best, manager of technical service, Mutual Chemical Div., Allied Chemical & Dye Corp.
2. A talk on the increased corrosion resistance of exterior automotive parts, by C. F. Nixon, head of the Electrochemistry Dept., General Motors Research Corp., Detroit.
3. *Nickel Plating Inside Pipe and Fittings,* by Dr. Dodd S. Carr, director of electrochemical research, Bart Manufacturing Co., Belleville, N. J.
4. *Corrosion Behavior and Protective Value of Electrodeposited Metals,* by C. H. Sample, head of the Electroplating Section, the International Nickel Co., Inc., New York.
5. *New Developments in Polishing and Buffing Materials,* by Howard McAleer, Formax Manufacturing Corp., Detroit, Michigan.
6. *Preparation of Metals for Finishing,* by William P. Innes, technical director, MacDermid, Inc., Waterbury, Conn.

TRAINING COURSES

Courses in Electroplating

Brooklyn, N. Y. **Fort Greene Evening High School.** Instructor: Louis Serota, 4495 Kings Highway, Brooklyn, New York.

Chicago, Ill. **Illinois Institute of Technology.** Instructor: J. M. Andrus, 3701 N. Ravenswood Ave., Chicago, Ill.

Cleveland, Ohio. **John Hay High School.** Instructor: John B. Winters, 24324 Smith Road, Westlake, Ohio.

Hartford, Conn. **State Trade School.** Instructor: Harry Sanders, 32 Olive St., Newington, Conn.

Los Angeles, Calif. **University of California Extension Division.** Instructor: Mitchell Raskin, 3034 Greenfield Ave., Los Angeles, Calif.

Newark, N. J. **Newark Branch, A. E. S.** For information contact Dr. Dodd Carr, Bart-Messing Corp., 229 Main St., Belleville 9, N. J.

New Haven, Conn. **New Haven College.** Instructor: Edward F. Foley, 442 Elm St., New Haven, Conn.

Philadelphia, Pa. **Temple Technical Institute.** Instructor: Dr. Samuel Heiman, 5155 Westford Rd., Philadelphia, Pa.

Providence, R. I. **Central Senior High School.** Instructor: Joseph A. Smith, Jr., 116 Wyoming Ave., Warwick, R. I.

Providence, R. I. **University of Rhode Island Extension School.** Instructor: Louis I. Kramer, 168 Gallatin St., Providence, R. I.

San Antonio, Texas. **Trinity University.** Instructor: William P. Wisdom, 423 Quentin Dr., San Antonio 1A, Texas.

Stroudsburg, Pa. **Kushner Electroplating School.** Instructor: Joseph B. Kushner, 115 Broad St., Stroudsburg, Pennsylvania.

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Courses in Spray Painting

Chicago, Ill. **Binks Manufacturing Co. School of Spray Painting.,** 3118-40 Carroll Ave., Chicago 12, Ill. Instructor: William Beacham.

Toledo, Ohio. **DeVilbiss Company School of Spray Finishing,** 300 Phillips Ave., Toledo 1, Ohio. Instructor: I. B. Thomas.

Dr. Dodd S. Carr, assistant director of electrochemical research, Bart Laboratories Co., Inc., Belleville, N. J., has described the practical electroplating course sponsored by the Newark Branch of the A.E.S., at a recent meeting of the New York Chapter.

Dr. Carr told the gathering that registration for the electroplating course had so exceeded expectations that a second course for the Spring "Semester" had to be planned to accommodate the overflow.

Members of other branches of the society interested in exploring the possibility of offering a similar course, may write directly to Dr. Dodd S. Carr, c/o Bart Laboratories Co., Inc., 227 Main St., Belleville, N. J., for more specific information on the various aspects of this course.

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The **Course of Study in Electroplating** given at the **Fort Greene Evening High School,** 29 Fort Greene Place, Brooklyn, New York, (formerly Brooklyn Evening Technical High School) will begin its spring term on February 1, 1956.

The session is divided into classroom discussion and laboratory experiments. The classroom topics will include simple calculations, reading graphs, chemistry of the plating tank, pH, wetting agents, pitting, deionizing. The laboratory experiments will include tank analysis, Hull cell studies, anodizing.

Registration will be held January 25 and daily thereafter from 7:00 to 9:00 p.m. Classes will meet on Tuesdays and Thursdays from 6:45 to 8:15 p.m. including about six Fridays. The term begins February 1 and ends June 30, 1956. Register with Louis Serota in room BW17 or 3E10.

HONORS

E. F. Lundeen, assistant superintendent of quality control, Inland Steel Company, Chicago, has received the **Annual Award of The Galvanizers Committee** which held the thirty-third annual meeting at the Drake Hotel. A gold wrist-watch, suitably inscribed,

was presented to Mr. Lundeen in recognition of distinguished service to The Galvanizers Committee and the The Galvanizers Committee and galvanizing division of the steel industry.

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Edgar C. Britton, director of the Edgar C. Britton Research Laboratory of the **Dow Chemical Company,** Midland, Michigan, and past president of the American Chemical Society, has been chosen to receive the highest award in American industrial chemistry, the Perkin Medal of the American Section, Society of Chemical Industry, for 1956.

Dr. Britton is honored for many contributions to industrial organic chemistry. Included in his accomplishments that form the basis of the award are important contributions to the American organic chemical industry.

NECROLOGY

Dr. Allen E. Chester, vice president of Promat Division, Poor and Company, died November 20, 1955, en route to Honolulu. He was fifty-four.

An outstanding research chemist, Dr. Chester held many patents in the fields of electrochemistry and vitreous enameling.

Dr. Chester came to Poor and Company from Ferro Corporation in 1938, and as research director, formed the Promat Division of Poor and Company. He was made vice president in 1952.

Dr. Chester was active and held offices in a number of technical societies, among them, The American Electroplaters' Society, American Society for Testing Materials, American Ceramic Society, National Association of Chrome Manufacturers, The Electrochemical Society, Faraday Society, and The American Association for the Advancement of Science.

MEETINGS of INTEREST to FINISHERS

Jan. 27-28. Management Seminar, National Association of Metal Finishers, Conrad Hilton Hotel, Chicago.

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Jan. 28. 44th Annual Educational Session and Banquet, Chicago Branch A.E.S., Conrad Hilton Hotel, Chicago.

Feb. 10-11. Annual Meeting, Educational Session and Banquet, Southeastern Branch, A.E.S., Biltmore Hotel, Atlanta, Ga.

Feb. 11. Annual Educational Session and Banquet, New York Branch, A.E.S., Sheraton-Astor Hotel, New York, N. Y.

Feb. 29. Symposium on Properties, Tests and Performance of Electrodeposited Metallic Coatings, Committee B-8, American Society for Testing Materials, Hotel Statler, Buffalo, N. Y.

Mar. 10. Tri-State Regional Meeting, American Electroplaters' Society, Biltmore Hotel, Dayton, Ohio.

Mar. 12-16. Twelfth Annual Conference, National Association of Corrosion Engineers, Hotel Statler, New York, N. Y.

Apr. 7. New England Regional Meeting, A.E.S., Hotel Statler, Hartford, Conn.

REPRINTS AVAILABLE

A limited number of reprints of the following articles from PRODUCTS FINISHING are available to readers without charge.

"Chemical Surface Treatment Extends the Durability of KoolVent All-Weather Aluminum Awnings,"
by Norman P. Gentieu.

"Cleaning and Phosphatizing International Harvester Truck Cabs."

"Conveyorized Shell Finishing,"
by Ezra A. Blount, Editor.

"Effect of Plating Thickness on Screw Thread Dimensions."

"Filter Out Your Plating Rejects,"
by Ezra A. Blount, Editor.

"Finishing Refrigerators with Hot Sprayed Enamel,"
by Frank L. Bonem.

"Flow Coating Range and Heater Parts,"
by Ezra A. Blount, Editor.

"Galvanizing Company Boosts Efficiency in New Plant."

"High Production and Safety Planned Into Sheet Metal Finishing System,"
by A. G. Trivison.

"Hot Spray Finishing of Machine Tools,"
by Roy W. Hill.

"How the Paint Warmer Aids Finish Application and Quality,"
by Lee Turner.

"Modern Masking Materials and Methods for Fabrication and Spray Finishing,"
by Arthur P. Schulze.

"Plating Die Castings in Conveyorized Plant,"
by Ezra A. Blount, Editor.

"Work Simplification Programs for the Metal Finisher,"
by S. J. Fecht.

"Tiny Electronic Parts Tumbled to Precision Finishes,"
by A. W. Kollosch.

"Educating Electroplaters by Mail,"
by Joseph B. Kushner.

"Automatic Polishing Speeds Production of Aluminum Trim Shapes,"
by Paul C. Barber.

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We need experienced, successful technical sales representative with proven sales record for expanding sales program. Must know plating, phosphating, porcelain enameling, other finishing. Liberal draw, commissions, expenses, car, other benefits. Write age, experience, income requirements, territory preference.

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SALESMAN

Electroplating Equipment Manufacturer offers excellent opportunity for man with experience in selling this type of equipment and supplies in the Mid-West. State experience and qualifications. Box No. 17, c/o Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

INDUSTRIAL SALES ENGINEER with sales and engineering experience in spray equipment and related paint accessory lines. Specializing in a complete line of hot spray equipment for all types of production painting, we offer a qualified man an exceptional opportunity with a growing concern in an important midwest territory. Direct your inquiry to the Sales Manager. The Spee-Flo Manufacturing Corp., 720 Polk, Houston, Texas.

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As one of the nation's larger manufacturers of industrial cleaning and processing compounds and equipment distributors, we have by far the most complete line of materials for major industry, including ultrasonic equipment and cleaning compounds.

Our technological advance in products and related processes has been so rapid we must expand our sales force, particularly in the Midwest and Eastern manufacturing areas. Industrial Paint Salesmen, Chemical Engineers or men experienced in chemical processing in metal fabrication, plants, will qualify.

Compensation: Base salary, plus commissions based on sales; car allowance or car furnished, reimbursement of expenses; Profit Sharing Plan, a better than average opportunity.

If you qualify, please furnish a complete resume of employment history, age, etc. All replies confidential. Our employees are aware of this ad. Write Box 14, c/o Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

BARREL FINISHING ENGINEER WANTED

Excellent opportunity in technical service for graduate engineer experienced in modern precision barrel finishing. Sales experience desirable. This man will be responsible for solving customers' barrel finishing problems, working both in our Western New York laboratory and in their plants. Salary commensurate with experience. Our employees know of this advertisement. Please submit full details of qualifications with first reply. Write Box No. 15, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

CHEMICAL TECHNICIAN WANTED:

Man with good background in Organic and Physical Chemistry, to work in the development of chemical treatments for the Metal-Finishing Industry.

Excellent opportunity for a qualified man to join a well-established, growing business. Location: Mid-West; salary, dependent on qualifications, plus profit sharing, pension, group insurance plans.

Write in detail to: Box No. 16, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

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Industrial Finishes Salesman needed by rapidly expanding manufacturer of quality finishes for industry. Aggressive management requires man with good industrial finishes sales record to work and expand excellent Indiana territory now producing good volume. Outstanding compensation, insurance, profit sharing plans plus other benefits. Send age, experience, etc. Complete confidence. Box No. 18, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

For Free Literature Circle Numbers on Card Inside Front Cover

PRODUCT LITERATURE

36. 101 Ways to Apply Electric Heat

A booklet available from Edward L. Wiegand Co., 7552 Thomas Blvd., Pittsburgh 8, Pa., gives examples of the many applications of Chromalox Electric Heating Units. Diagrams and photos are used to illustrate the explanation of each application. Accessories are listed separately.

37. Anodes

Data on brass, cadmium, copper, lead, nickel, tin, zinc, and special alloy anodes is contained in literature which may be obtained from R. Lavin & Sons, Inc., 3426 S. Kedzie Ave., Chicago 23, Ill.

38. Dip Tank Heater

Booklet entitled "Viscosity Control for Dip Tanks" describes heater and liquid temperature controller used to maintain viscosity of paint in dip tanks. Spee-Flo Mfg. Corp., 720 Polk Ave., Houston 2, Texas.

39. Corrosion Resistant Equipment

A catalog describing a complete line of corrosion-resistant equipment has been issued by Haveg Corporation, 900 Greenbank Rd., Wilmington 8, Del. The catalog features new materials of construction and evaluates equipment molded from polyvinyl chloride, epoxy glass and polyester glass.

40. Phosteem

Bulletin 55-37 describes process of cleaning and phosphatizing metal surfaces using a specially designed steam gun. Neilson Chemical Co., 6561 Benson St., Detroit 7, Mich.

41. Complete Finishing Systems

Catalog A-656. Information on and typical examples of integrated conveyorized systems for the application of paint, varnish, lacquer, enamels, and porcelain enamel. Describes Type 54 AC-F frit booth, which incorporates automatic sludge unloader. The R. C. Mahon Co., Detroit 34, Mich.

42. Tumbling Abrasives

Information on tumbling abrasives designed to meet specific finishing requirements. The Exolon Co., 943 E. Niagara St., Tonawanda, N. Y.

43. Diaphragm Plating Tanks

Helpful information is given in manual entitled "Diaphragm Tanks Promote Plating Progress." Automotive Rubber Co., Inc., 12561 Beech Rd., Detroit 39, Michigan.

44. Surface Finish Measurement

Instruments designed for the measurement of surface finish are illustrated and described. Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio.

45. Screen Process Materials

Specifications and descriptive information on presses and supplies for screen process printing. General Research & Supply Co., 572 S. Division Ave., Grand Rapids, Mich.

46. Industrial Lining

Amer-Plate 94Y, an acid-resistant lining for steel, wood, and concrete tanks or structures, is described. Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.

47. Heat Exchangers

Catalog gives information on Karbate plate type and bayonet type heat exchangers for heating or cooling corrosive solutions in all types of tanks or vessels. National Carbon Co., Div. Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

48. Dual Action Sander

Information on Model D.A. Easy Dual Action Sander is given in a data sheet. This sander can be used for heavy removal or fine finishing. Detroit Surfacing Machine Co., 1333 E. Eight Mile Rd., Detroit 20, Mich.

49. Ultrasonic Thickness Gage

A folder on the "Vidigage" Ultrasonic resonance thickness gage. Branson Instruments, Inc., 430 Fairfield Ave., Stamford, Conn.

50. Nickel Activator

Data sheet No. 8 describes Chrometex nickel activator, which is used to activate nickel prior to chromium plating, assuring bright chromium coverage over the entire piece. MacDermid, Inc., Waterbury 20, Conn.

51. Tumbling Barrels

Literature describes Esbec tumbling barrels, which may be used for ball burnishing as well as abrasive tumbling. The Esbec Barrel Finishing Corporation, 18 Beech St., Byram, Conn.

52. Pre-Galv

Bulletin G1-F describes Promat pregalvanizing process, an acid additive for providing controlled etching of metal to be galvanized without danger of overpickling. Promat Division, Poor & Co., 851 S. Market St., Waukegan, Ill.

53. Tubular Filters

Outstanding features and advantages of the tubular solution filters, Type TS, are described in Bulletin No. TS-160-755. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill.

54. Centrifugal Dryer

Folder gives details on New Holland Model 20 Kreider centrifugal dryer. This equipment is designed to dry small parts rapidly and thus reduce finishing problems by eliminating scarring due to water spots. New Holland Machine Co., Dept. PF-1155, New Holland, Pa.

55. Backstand Idler

Folder gives details on the "61" Universal Backstand Idler, designed to facilitate polishing operations which require frequent setup changes. The Carborundum Co., Dept. PF, Niagara Falls, New York.

56. Conveying Equipment

Catalog describes and shows applications for many different types of conveyors, including roller, belt, chain, overhead trolley and elevating types. Special conveying devices are also discussed and illustrated. Mathews Conveyor Co., Ellwood City, Pa.

57. Nickel Plating Brightener

A pamphlet featuring Mirro-Glo, the brightener for use in room-temperature, still tank nickel-plating solutions. The Lea Manufacturing Co., 16 Cherry Ave., Waterbury 20, Connecticut.

58. Corrosion

A booklet on causes and prevention of corrosion. Several methods of and products for corrosion protection are described in detail. Interchemical Corporation, Finishes Div., Newark 5, N. J.

59. Fluid Processing Equipment

Machinery for washing, pickling, drying, and other metal parts processing is shown. Photographs illustrate the equipment discussed; advantages for the various units are given. Metalwash Machinery Corp., 915 North Ave., Elizabeth 4, New Jersey.

60. Coloring Anodized Aluminum

Samples of aluminum in various colors and data on coloring aluminum form an interesting booklet. Sandoz Chemical Works, Inc., 61 Van Dam St., New York 13, N. Y.

61. Polishing Machinery

Specifications on a complete line of rotary, straight line, semi-automatic and special polishing and buffing machines. Acme Manufacturing Co., 1400 E. 9 Mile Rd., Detroit 20, (Ferndale) Mich.

62. Wood Tanks

Catalog shows a variety of wood tanks, pipes, fume ducts and vents which are useful in plating and pickling operations. Kalamazoo Tank and Silo Co., 1233 Harrison St., Kalamazoo, Mich.

63. Solvent Recovery Stills

Data sheet describes Circo solvent recovery stills, recommended for use with larger degreasers, where excessive contamination is present, or in cases where it is inadvisable to stop the flow of production long enough to operate solvent reclamation units incorporated on degreasers. Circo Equipment Co., 128 Central Ave., Clark (Rahway), N. J.

64. Designing a Dust Collection System

Engineering data and drawings of value in designing a dust collection system are presented in a literature sheet. Standard Dustkop parts which are used in dust collection are described and illustrated. Information is included on how to lay out your own system, how to build hoods, and how to select the right dust collector for the job. Aget Mfg. Co., 1390 E. Church St., Adrian, Mich.

65. Burnishing Materials

Catalog on Abbott burnishing shapes: ball, ovaball, cone, diagonal and pin. Applications for each are described. The Abbott Ball Co., 1064 New Britain Ave., Hartford 10, Conn.

66. Phosphate Coating

Detailed information on the Cryscoat processes for phosphatizing steel prior to painting is given in a booklet which includes technical data on corrosion and its causes. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

67. Metals and Chemicals

Bulletin C197R, describing characteristics and uses of chemicals and other products derived from tin, antimony and zirconium. Product groups described include inorganic and organic tin chemicals, organotin stabilizers, stannous soaps, antimony chemicals, zirconium products and various metals and alloys. Includes description of physical and chemical properties. Applications are listed for end uses in the chemical industries, immersion tinning and electroplating, ceramics, and others. Metal & Thermit Corp., 100 E. 42nd St., New York 17, N. Y.

68. Buffing Information

Comprehensive brochure gives helpful information on buffing and a variety of buffs and polishing wheels. Includes table of surface speeds for buffing wheels. American Buff Co., 2414 S. LaSalle St., Chicago 16, Ill.

69. Barrel Finishing Equipment

A complete line of barrel finishing equipment and accessories is illustrated. Rampe Manufacturing Co., 14915 Woodworth Ave., Cleveland, Ohio.

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70. Spray Washing Compound

Elimination of scale formation in nozzles and heating coils is one of the features of Diversey 519, a cleaning compound discussed in this catalog. The Diversey Corp., 1820 Roscoe St., Chicago 13, Illinois.

71. Drum Mixer

A machine for agitating drums of paint or other liquids is illustrated and described in a data sheet available from the Lansing Industrial Sales Co., 2301 W. Main St., Lansing 15, Michigan.

72. Industrial Paint Finish

The versatility and wide application of Nubelite, a custom-formulated industrial paint finish for use on any metal product, is highlighted in a comprehensive brochure. The Glidden Company, 11005 Madison Ave., Cleveland 2, Ohio.

73. Conveyors

A 60-page catalog shows typical installations of Richards-Wilcox Zig-Zag conveyors in finishing operations. Helpful engineering data relative to the proper installation, use, and maintenance of conveyors is included. Richards-Wilcox Mfg. Co., Materials Handling Div., 276 W. Third St., Aurora, Ill.

74. Air Sander

Data sheet shows construction and operational features of Sundstrand Orbital Air Sander. Sundstrand Machine Tool Co., Pneumatic Div., Rockford, Ill.

75. Rack Coating

Information on Coating 218X, which is baked on plating racks to give better chemical resistance and longer wearing characteristics. United Chromium Div., Metal & Thermit Corp., 100 E. 42nd St., New York 17, N. Y.

76. Hammer Finish Additive

Information on films formed from paints which include small amounts of a new Dow Corning silicone additive to produce a hammered effect. Dow Corning Corp., Midland, Mich.

77. Filters

A booklet describing the Sel-Rex Double Duty Filters for use in electroplating, chemical processing and paint and varnish processing. Bart-Messing Corp., Dept. PF-1, 229 Main St., Belleville 9, N. J.

78. Buffing Compound Specifications

Specifications for a variety of greaseless buffing compounds are given in a data sheet which includes information on abrasive sizes, type finish produced by using each, and applications. Atlantic Compound Co., 1860 Baldwin St., Waterbury, Conn.

79. Aerosol Finishes

Points for consideration in evaluating aerosol packaged finishes. Sprayon Products, Inc., 2075 E. 65th St., Cleveland 3, Ohio.

80. Steam Traps

A bulletin giving advantages and desirable features of the Sarco Thermodynamic Steam Trap, which has only one moving part. Sarco Co., Inc., Dept. P, Empire State Bldg., New York, N. Y.

81. For Measuring Surface Finish

Technical and Application Manual TM-951-1, available from the Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa., contains detailed information and technical data concerning the Fielden Proximity Meter Capacitance Gauge, which can be used for measuring surface finish of metal and other surfaces.

82. Heavy Duty Fans

Design and construction features of heavy duty fans are described in Bulletin 544. The New York Blower Co., 32nd and Shields Ave., Chicago 16, Ill.

83. Anodes and Chemicals

A bulletin listing McGean anodes and chemicals for nickel plating. The McGean Chemical Co., 1040 Midland Bldg., Cleveland 15, Ohio.

84. Automatic Barrel Plating Machine

Bulletin details advantages of Udylite automatic barrel plating machines. Describes features such as flexibility, ease of loading and ability to do specification plating. The Udylite Corp., Detroit 11, Michigan.

85. Bench Model Rectifiers

Data sheet describes bench model rectifiers. These units are designed to furnish d.c. power for bench and laboratory use. Rapid Electric Co., 2877 Middletown Rd., New York 61, N. Y.

86. Aluminum Preparation Materials

Folder describes Pennsalt products for cleaning, etching, desmutting and deoxidizing aluminum prior to painting. Pennsylvania Salt Manufacturing Co., 3 Penn Center Plaza, Philadelphia 2, Pa.

87. Helpful Publications

List "A," available from the International Nickel Co., Inc., 67 Wall St., New York 5, N. Y., contains a list of technical articles and publications of value to production men, design engineers, metallurgists, and metal users.

88. Lacquer

"The Economic Advantages of Modern Lacquer," is the title of a booklet which gives complete description and full information on the use of hot spray lacquer. Hercules Powder Co., Wilmington 99, Delaware.

89. Centrifugal Dryer

Brochure describes the Nobles centrifugal dryer. These units are available with steam or electric heaters mounted in the cover to hasten the drying action and save space. Nobles Engineering & Mfg. Co., 651 E. Seventh St., St. Paul 6, Minnesota.

90. Bright Nickel

Outstanding features of Perglow bright nickel are detailed in a folder which includes information on specific properties, such as brightness, leveling, ductility, ease of operation, tolerance to impurities and ease of chromium plating over the nickel. Harshaw Chemical Co., Cleveland 6, Ohio.

91. Cabinet Ovens

Bulletin gives data on heavy duty cabinet ovens for baking and drying. Uniform work chamber temperature is assured by a high pressure blower on the ovens. The W. W. Sly Manufacturing Co., 4784 Train Ave., Cleveland 1, Ohio.

92. Flow Coating

Advantages of flow coating are pointed out in Bulletin 33, showing typical installations of Koch complete flow coating systems. George Koch Sons, Inc., Evansville, Indiana.

93. Tack Cloth

Data sheet gives details on different types of tack cloth. Several degrees of "tackiness" are available, each suited to a particular sort of application. These tack cloths are also useful for collecting dust and foreign particles in air filtering systems. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

94. Plating Rack Coatings

Bulletin describes plastisol plating rack coatings formulated to resist a wide variety of chemicals. Stanley Chemical Co., 31 Berlin St., East Berlin, Conn.

95. Cadmium Brightener

A technical data sheet on Cadlux, a brightener formulated for still and barrel cadmium plating, is available from Kosmos Electro-Finishing Research, Inc., 13 Valley St., Belleville 9, N. J.

96. Cleaning and Phosphatizing

Solutions for one-stage or multiple-stage cleaning and phosphatizing are described. Solution for one-stage cleaning and phosphatizing is designed for applications where cleaning is not complicated. Multiple-stage solution is designed for use where rust, grease and foreign matter is difficult to remove. Kiem Chemicals, Inc., 14401 Lanson Ave., Dearborn, Michigan.

97. Barrel Finisher

Specification sheet describes Model DBO-1A twin barrel model, designed for processing small lots of parts, for close tolerance processing, and for sample and development work. Almco Div., Queen Stove Wks., Inc., 811 Marshall St., Albert Lea, Minn.

98. Automatic Immersion Processing Equipment

Details of an automatic immersion processing machine designed for the bright dipping of aluminum and/or brass are covered in a selection of trade publication reprints. Frederic B. Stevens, Inc., Detroit 16, Mich.

99. Tank Linings

"Perma-Line Linings for Industry," a booklet describing rubber lined tanks, Perma-Coil heat exchanger coils, ventilation and exhaust systems, anode baskets, and other corrosion resistant equipment. Perma-Line Rubber Products Corp., 1753 N. Winnebago Ave., Chicago 47, Illinois.

100. Temperature Controllers

Bulletin 330 describes indicating controllers for precise temperature control of plating baths, to prevent troubles associated with too low or too high a bath temperature. The Powers Regulator Co., Skokie, Ill.

101. Plating Solution Filters

Catalog illustrates equipment designed to filter plating solutions and thus improve quality. Aisop Engineering Corp., 1009 Keen St., Milldale, Conn.

102. Flexible Contact Wheels

Catalog No. 12 gives specifications and applications for Style No. C-20 Abrasive Belt Contact Wheels. Formax Mfg. Corp., Detroit 7, Mich.

103. Analysis by Electrodeposition

Bulletin FS-250 gives advantages of laboratory analysis via electrodeposition and describes instruments for the methods, including the Electro-Analyzer, Electropode, Amperometric Titrimeter, and T.E.L.-Meter. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

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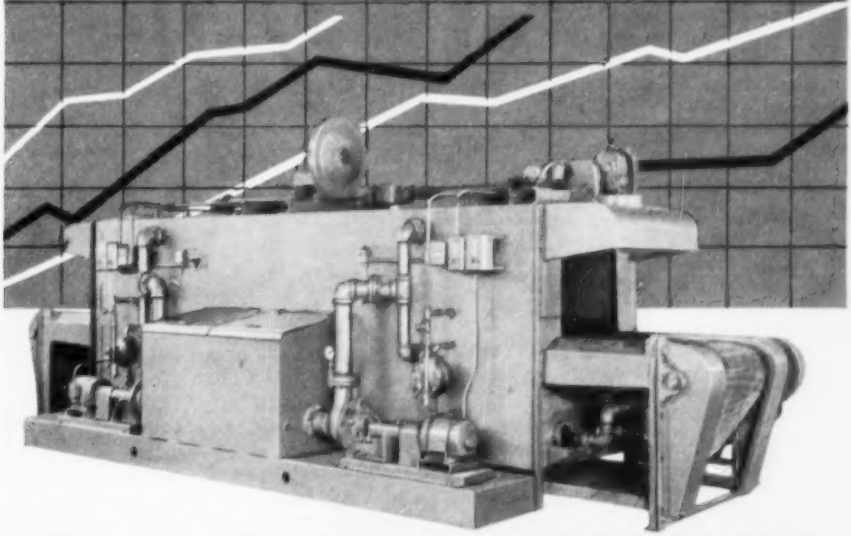

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